

FIG. 1

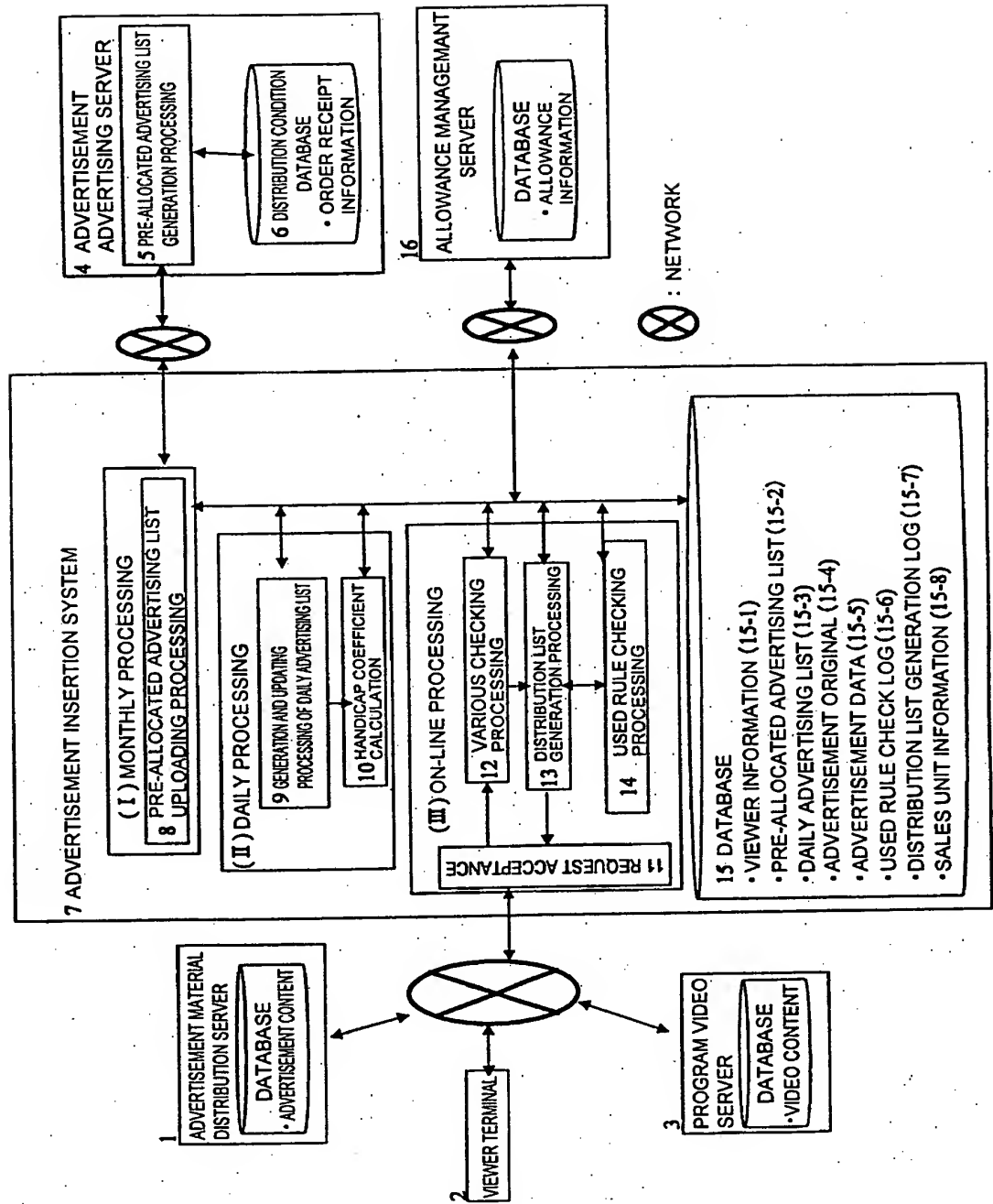


FIG. 2

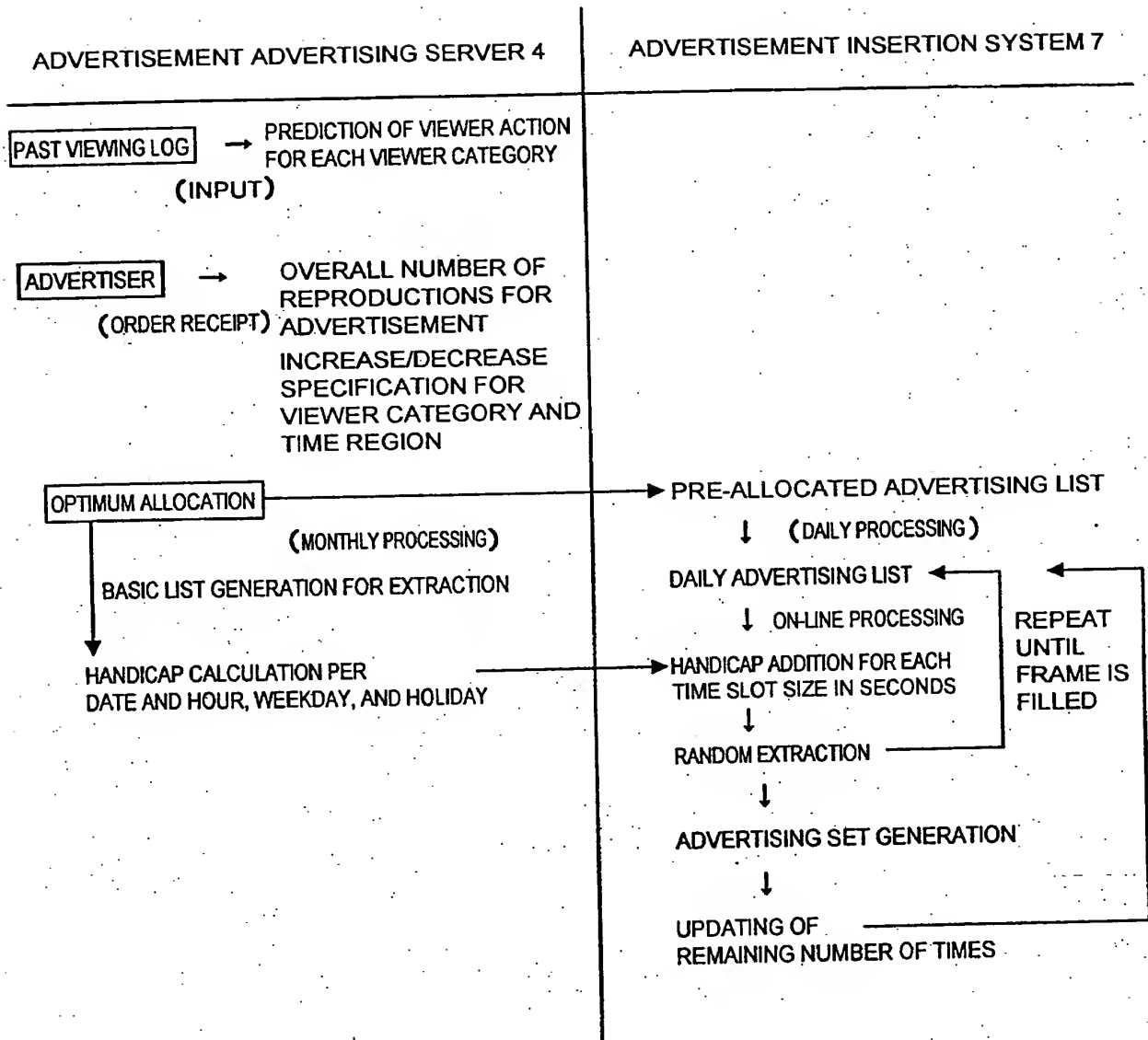


FIG. 3

ADVERTISER A OVERALL DESIRED NUMBER OF REPRODUCTIONS FOR
ADVERTISEMENT *** TIMES

UNIQUE CATEGORY	1 4 ~ 2 4	2 5 ~ 3 4	3 5 ~	→ (FOR EXAMPLE, AGES)
CONSTITUENT INDIVIDUALS	a b c	d e f	g h	
EMPHASIS SETTING	+	-	0	

ADVERTISER B OVERALL DESIRED NUMBER OF REPRODUCTIONS FOR
ADVERTISEMENT *** TIMES

UNIQUE CATEGORY	1 0 ~ 1 9	2 0 ~ 2 9	3 0 ~
	a b	c d e	f g h
EMPHASIS SETTING	-	+	0

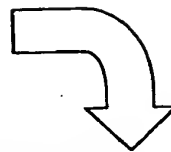
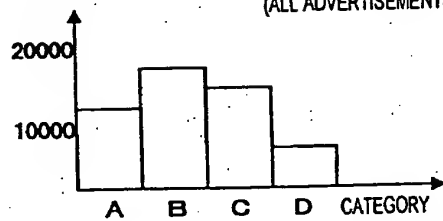
MINIMUM UNIT CATEGORY SETTING
WITHIN A TIME PERIOD

MINIMUM UNIT CATEGORY	10~14	15~19	20~24	25~29	30~34	35~
CONSTITUENT INDIVIDUALS	a	b	c	d e	f	g h
EMPHASIS SETTING OF ADVERTISEMENT A	+	+	+	-	-	0
EMPHASIS SETTING OF ADVERTISEMENT B	-	-	+	+	0	0

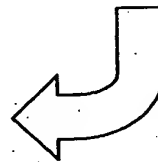
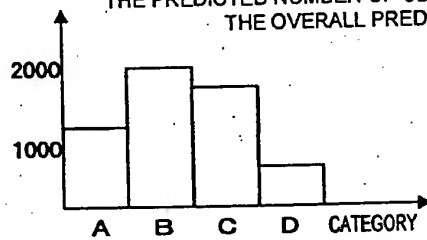
FIG. 4

<< PREDICTED NUMBER OF SLOTS >>

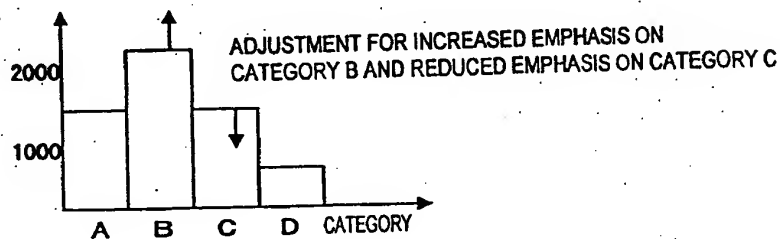
(ALL ADVERTISEMENTS)



<< INITIALLY DESIRED NUMBER OF REPRODUCTIONS FOR ADVERTISEMENT >>
 (=THE OVERALL DESIRED NUMBER OF REPRODUCTIONS FOR ADVERTISEMENT MULTIPLIED BY THE RATIO OF
 THE PREDICTED NUMBER OF SLOTS FOR EACH CATEGORY RELATIVE TO
 THE OVERALL PREDICTED NUMBER OF SLOTS)



<< DESIRED NUMBER OF REPRODUCTIONS FOR ADVERTISEMENT AFTER INCREASE/DECREASE ADJUSTMENT >>



<< NUMBER OF ALLOCATIONS >>

AN ACTUAL NUMBER OF ADVERTISEMENTS FOR EACH CATEGORY IS DETERMINED SO THAT THE
 TARGET FUNCTION $Z = \sum_{i,j} \{ K(i,j) \times | \text{DESIRED NUMBER OF REPRODUCTIONS FOR ADVERTISEMENT AFTER INCREASE/DECREASE ADJUSTMENT} - \text{NUMBER OF ALLOCATIONS} | \}$
 IS MINIMIZED, WHERE i IS THE ADVERTISEMENT TYPE, j IS THE CATEGORY, AND
 $K(i,j) = 1$ (TARGET SPECIFICATION) or ARBITRARY CONSTANT (WITHOUT TARGET SPECIFICATION)

FIG. 5

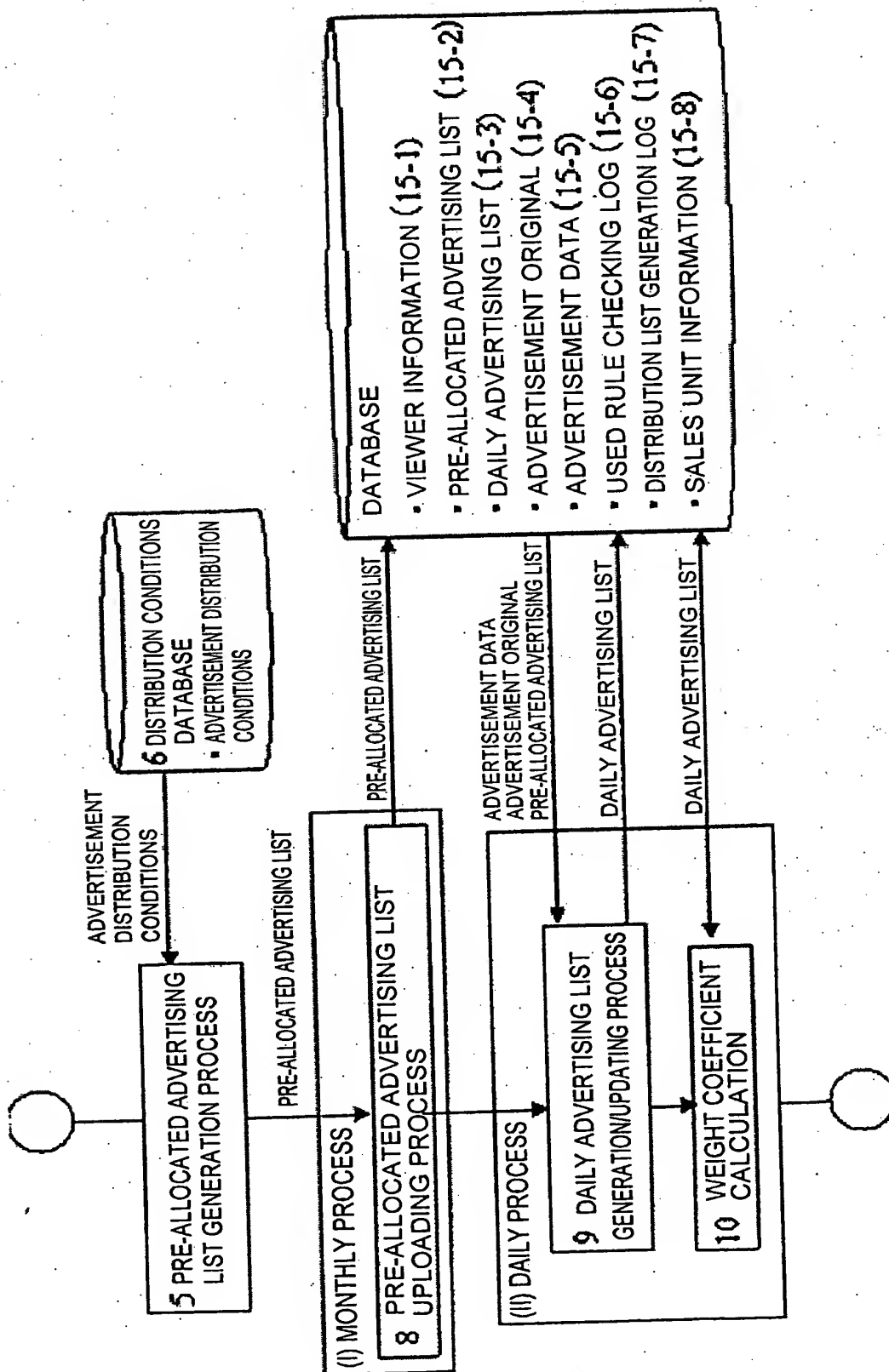


FIG. 6

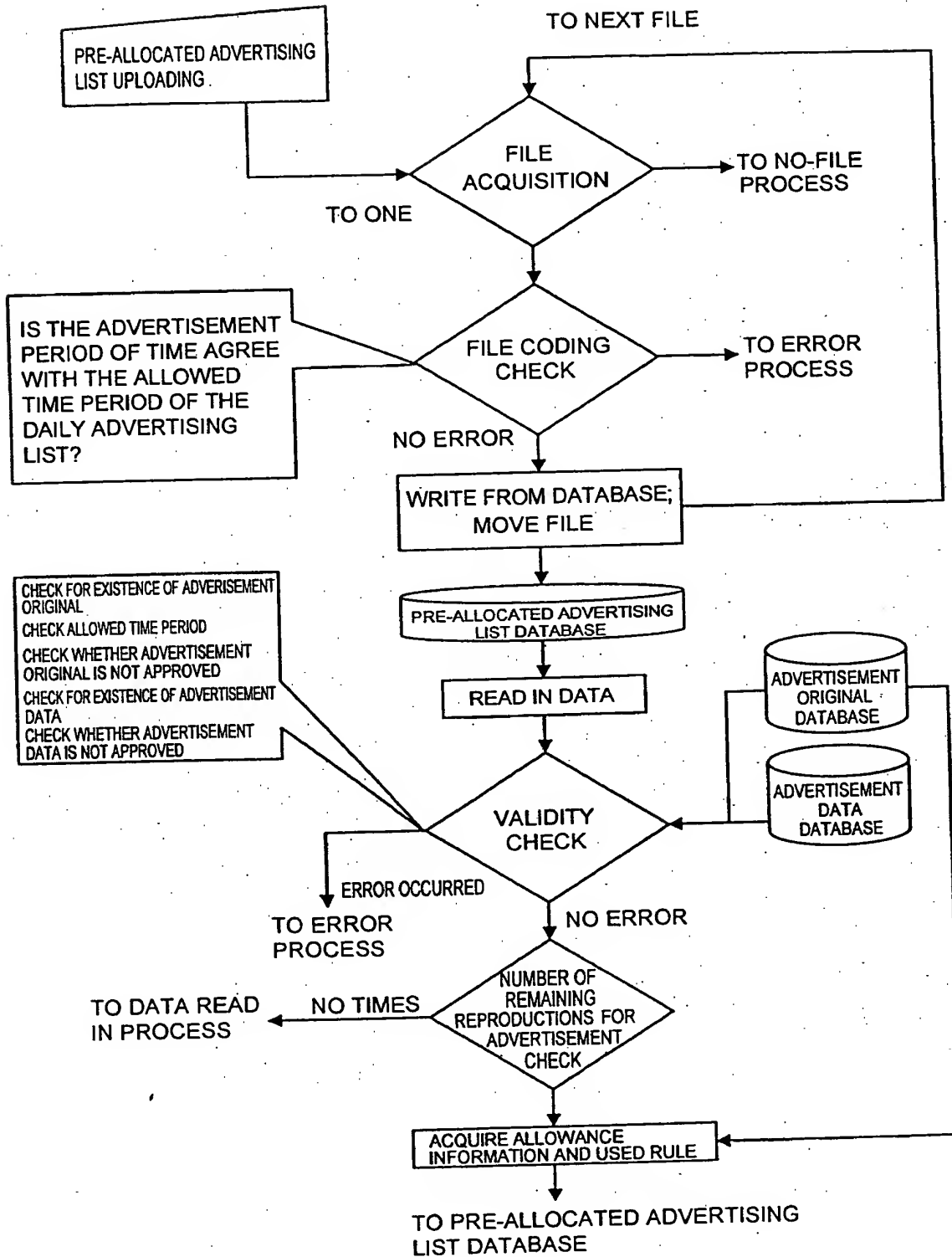


FIG. 7

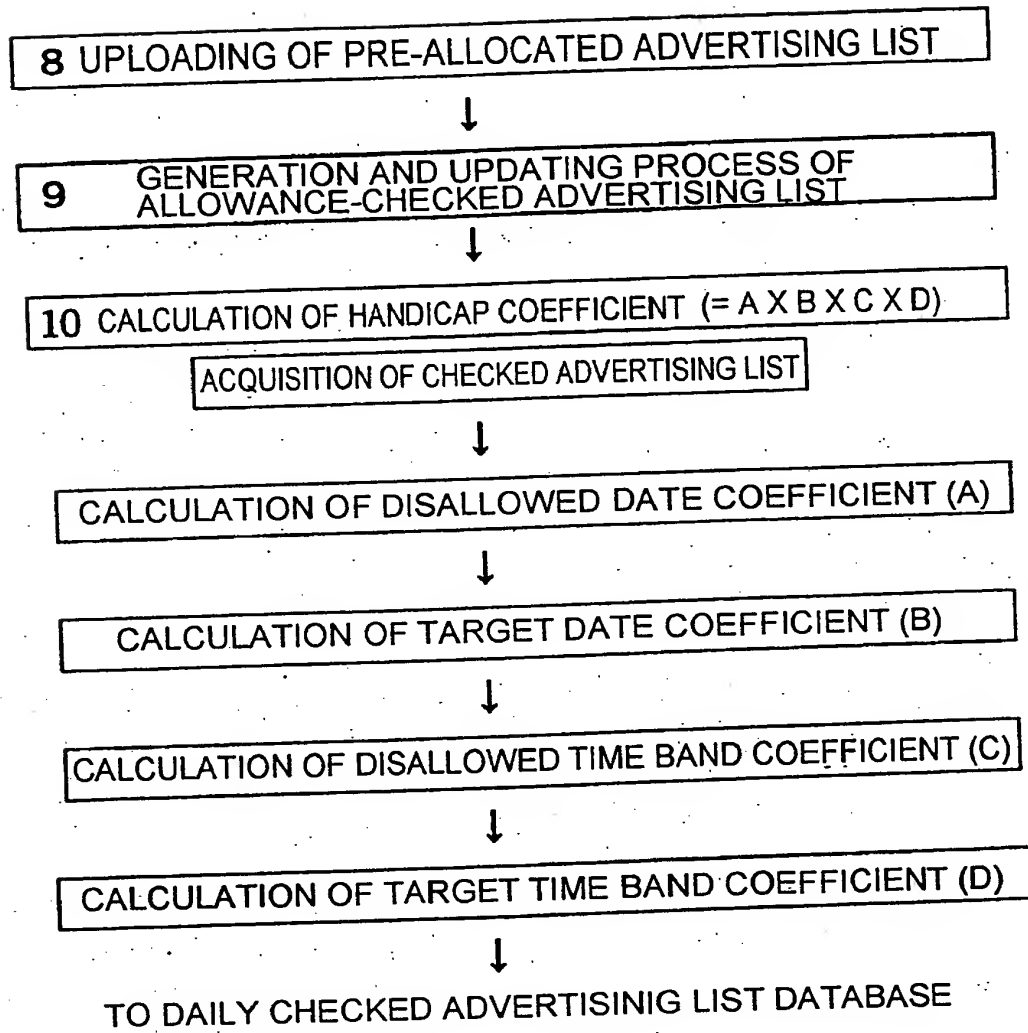


FIG. 8

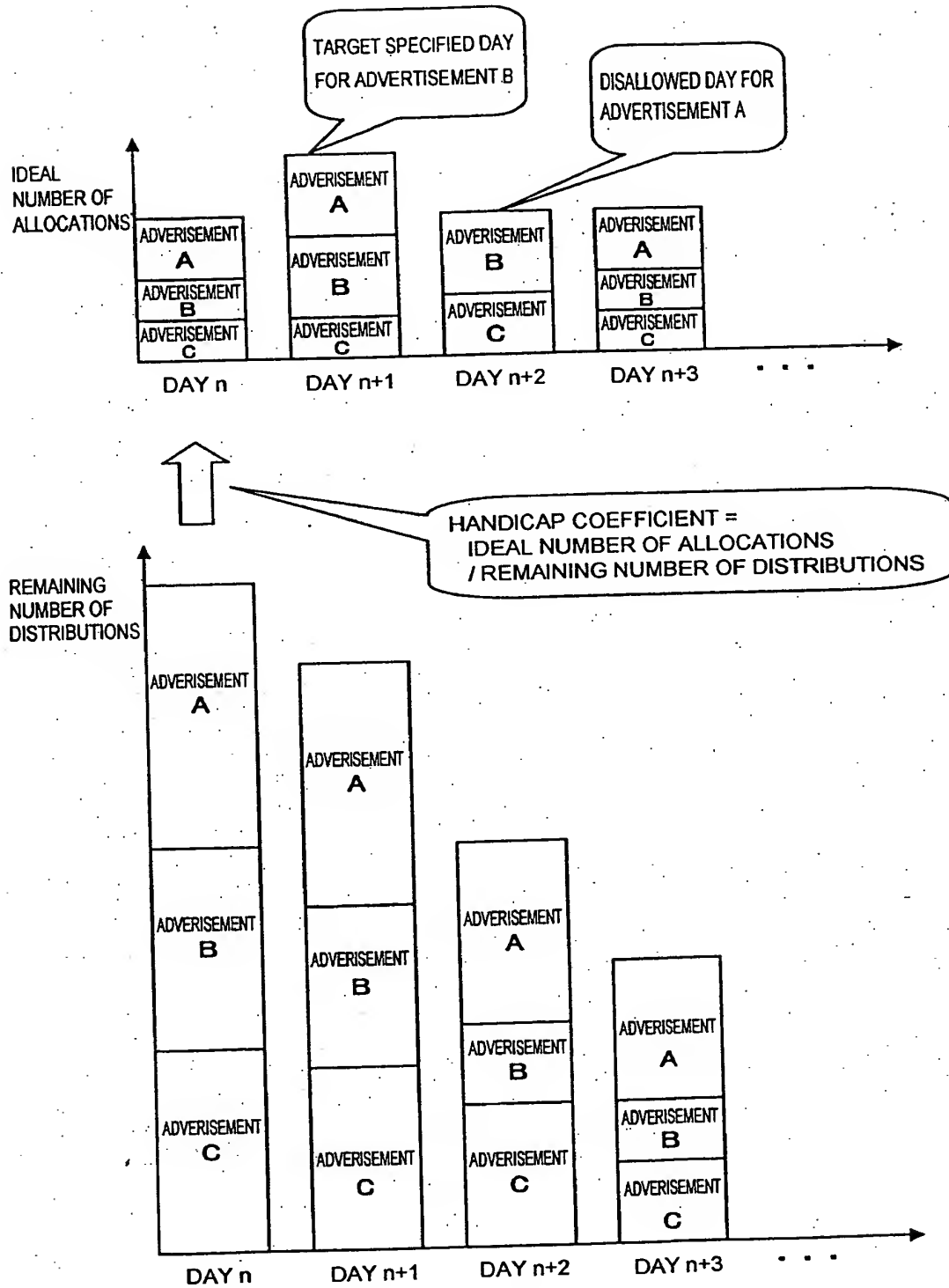


FIG. 9

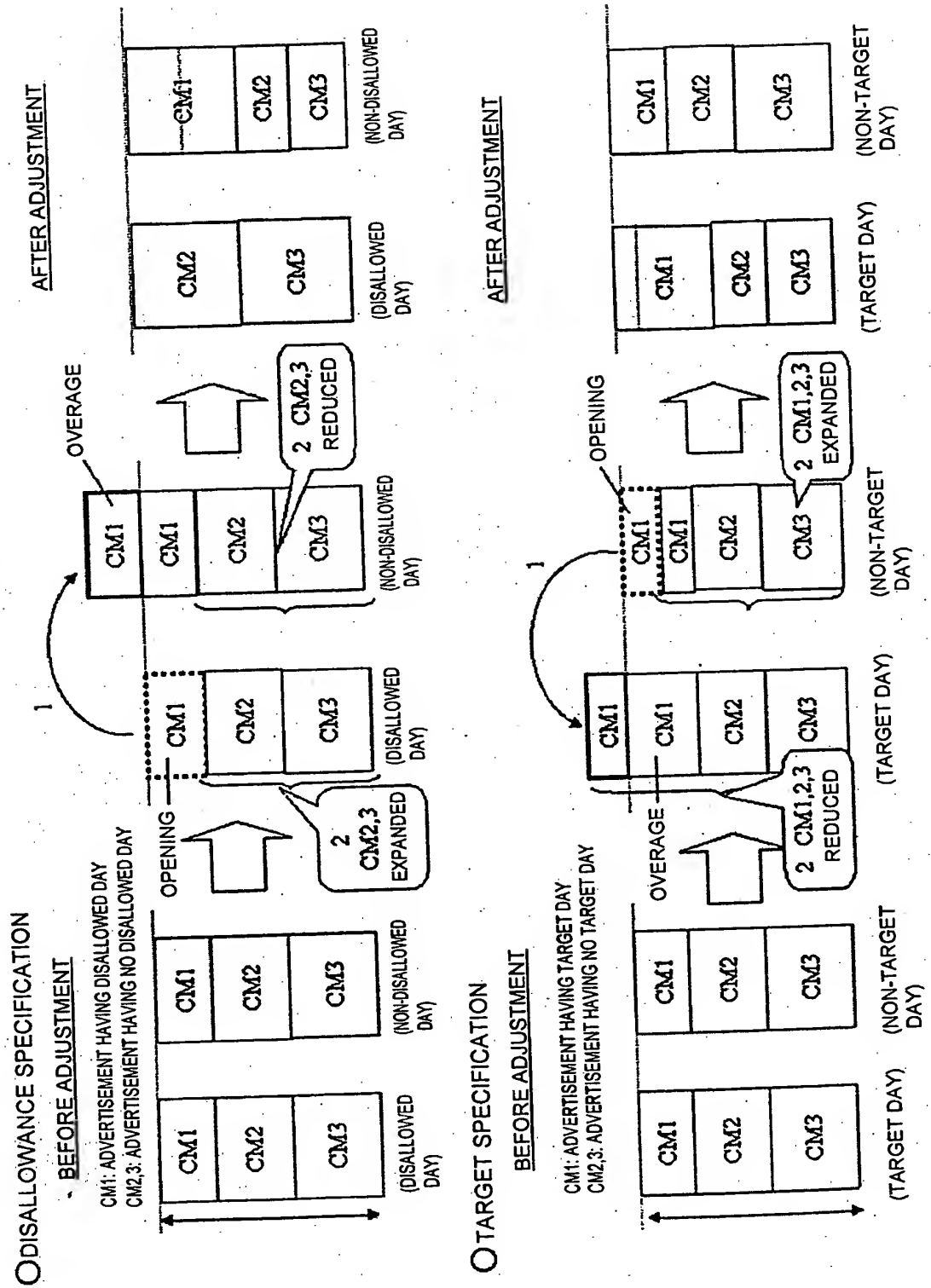


FIG. 10

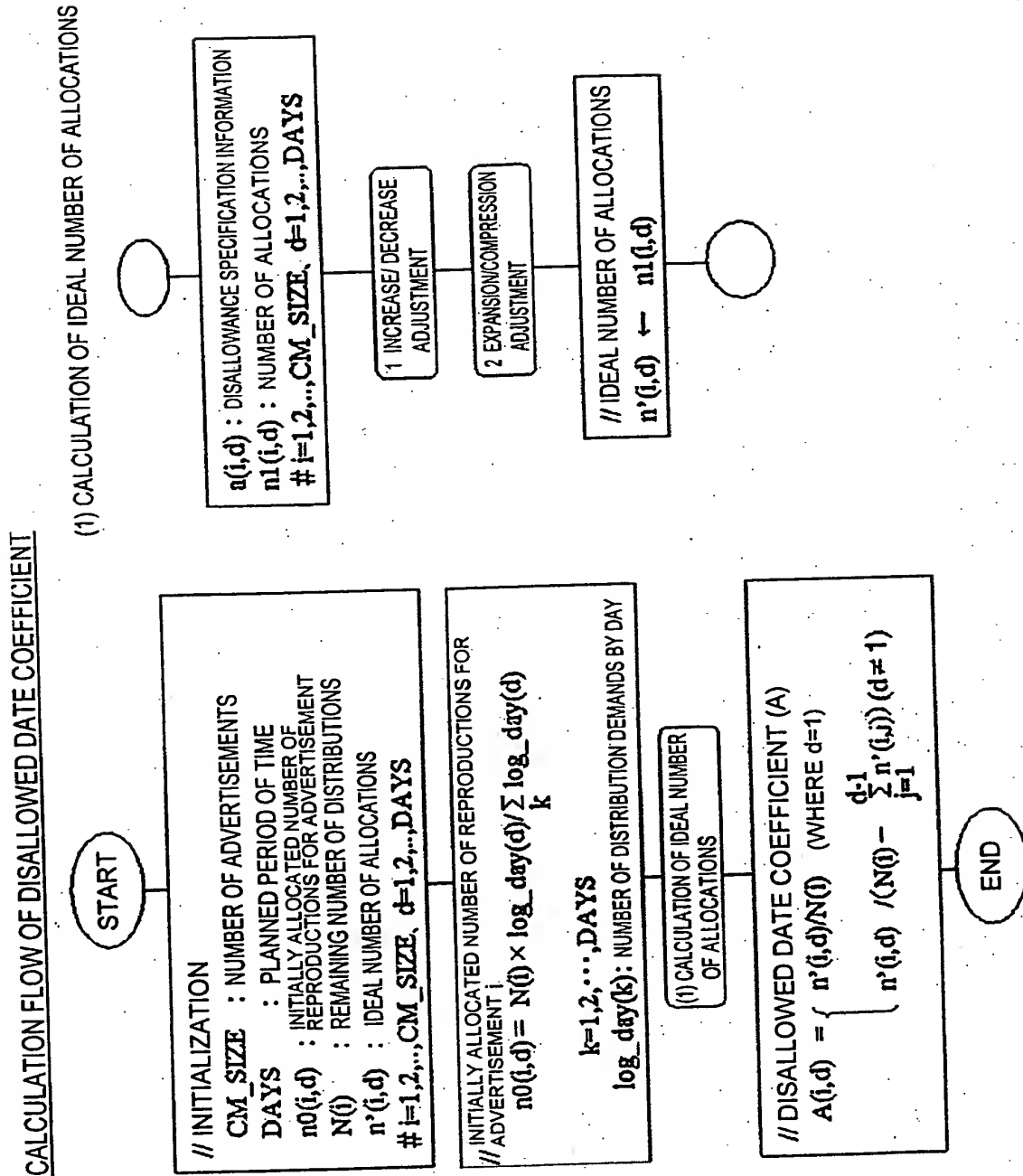


FIG. 11

CALCULATION FLOW OF TARGET DATE COEFFICIENT (1) CALCULATION OF IDEAL NUMBER OF ALLOCATIONS

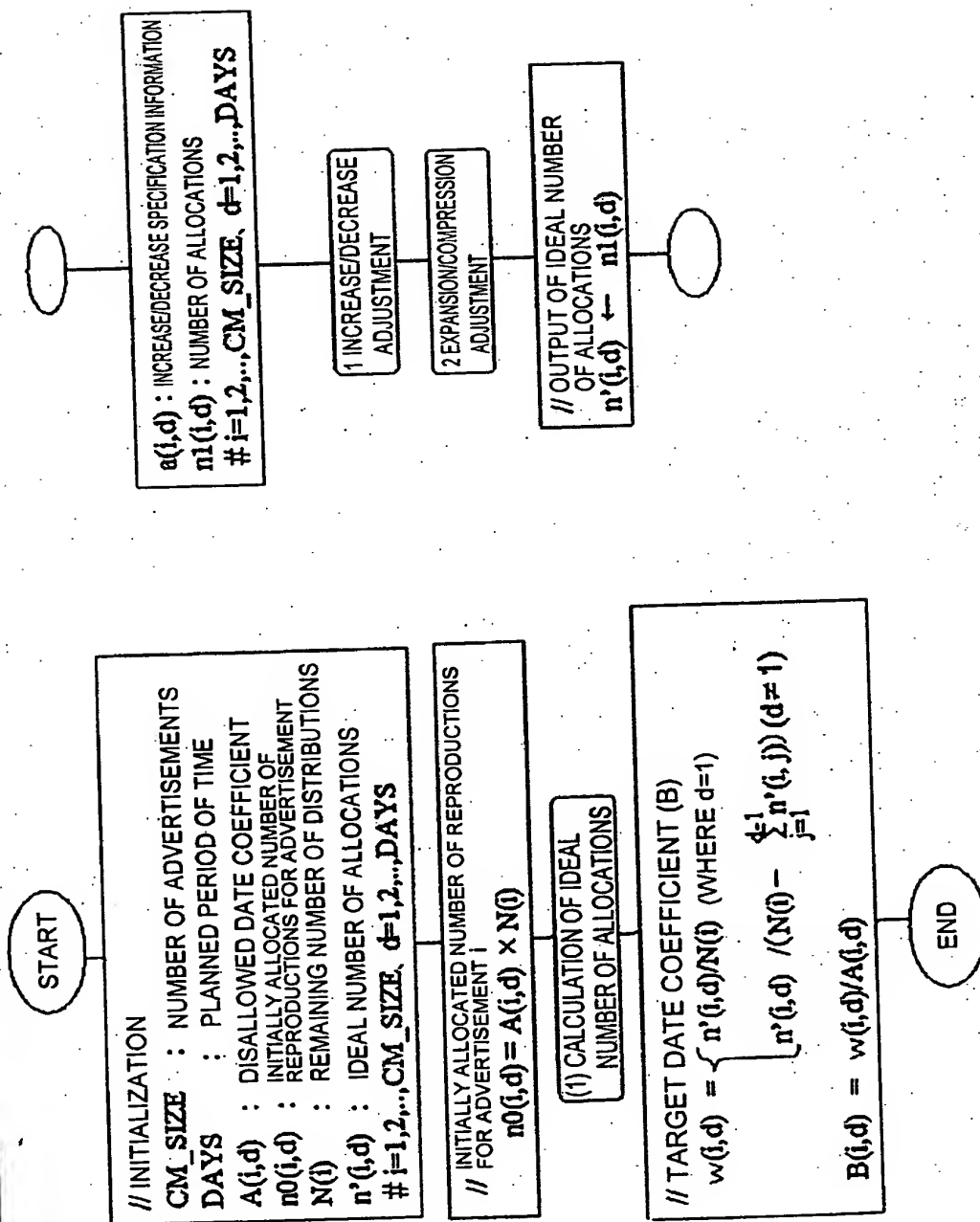


FIG. 12

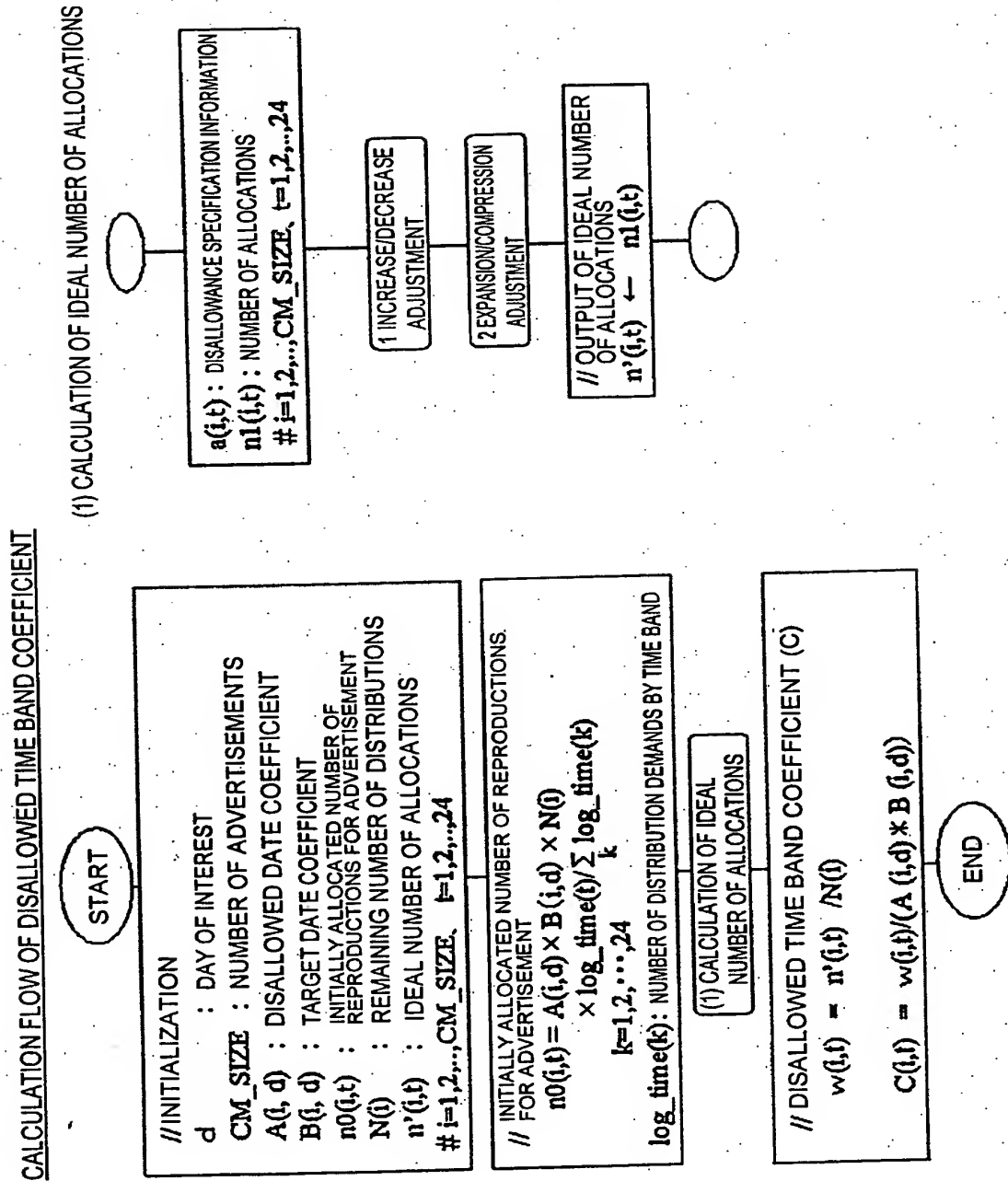


FIG. 13

CALCULATION FLOW OF TARGET TIME BAND COEFFICIENT

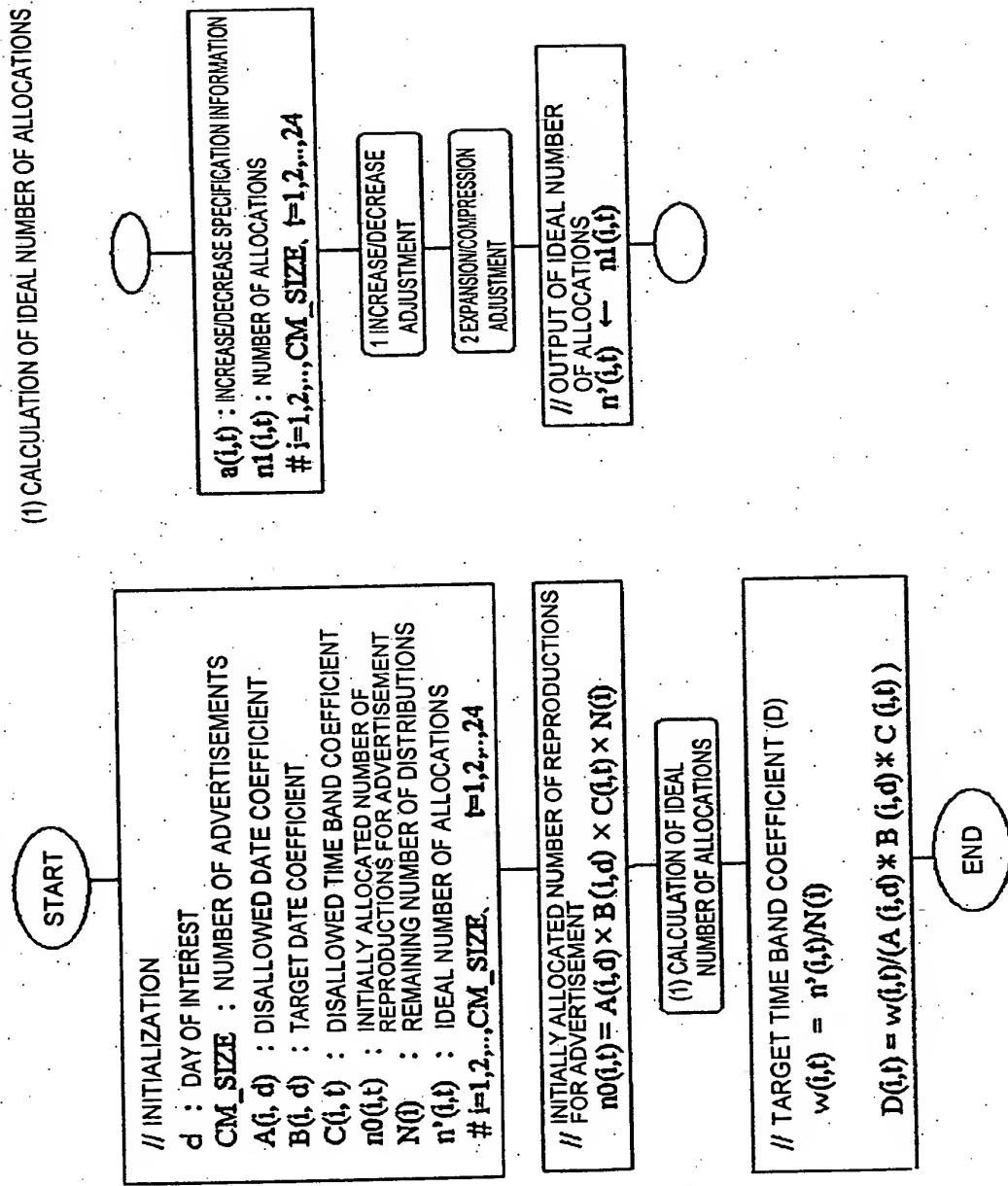


FIG. 14

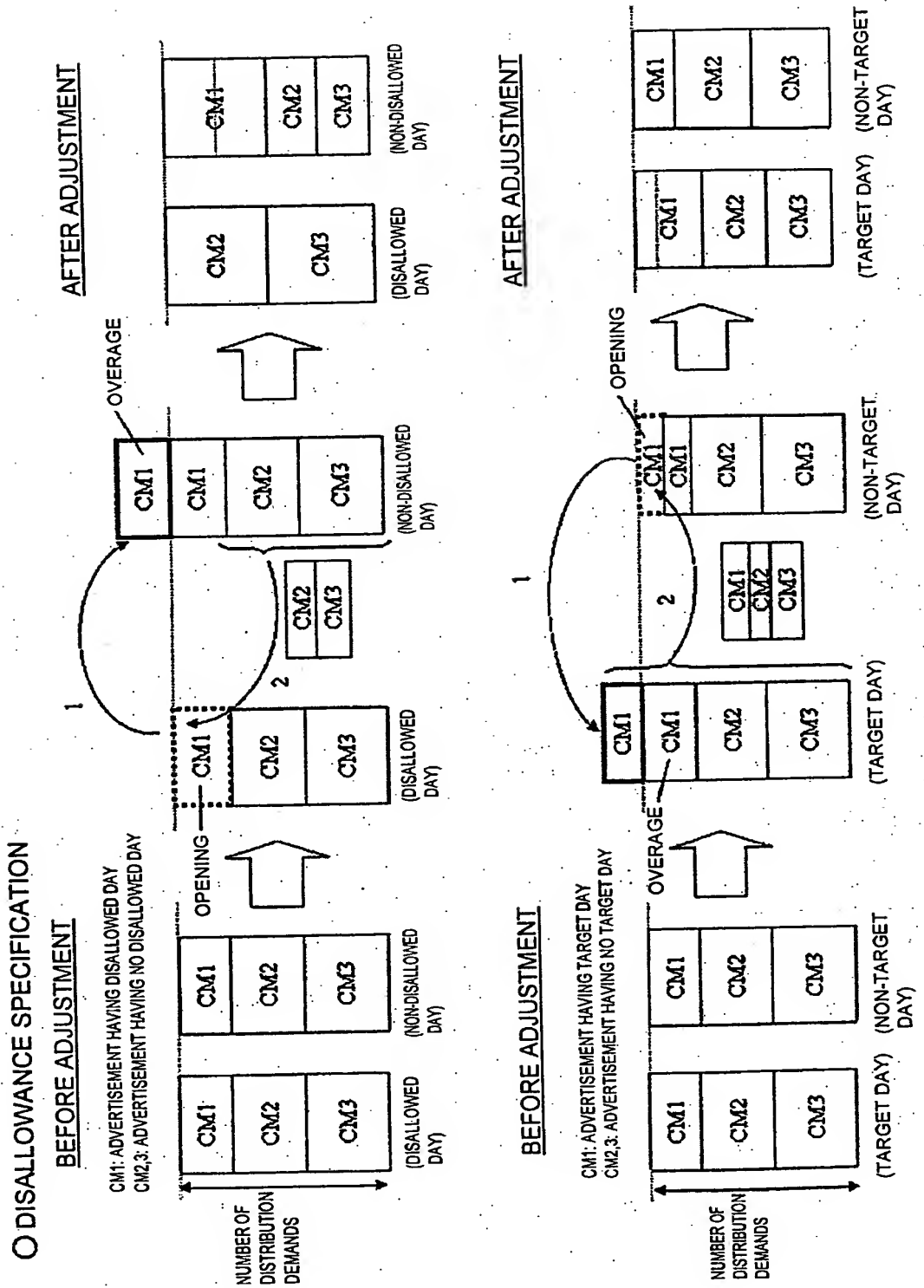


FIG. 15

CALCULATION FLOW OF DISALLOWED DATE COEFFICIENT

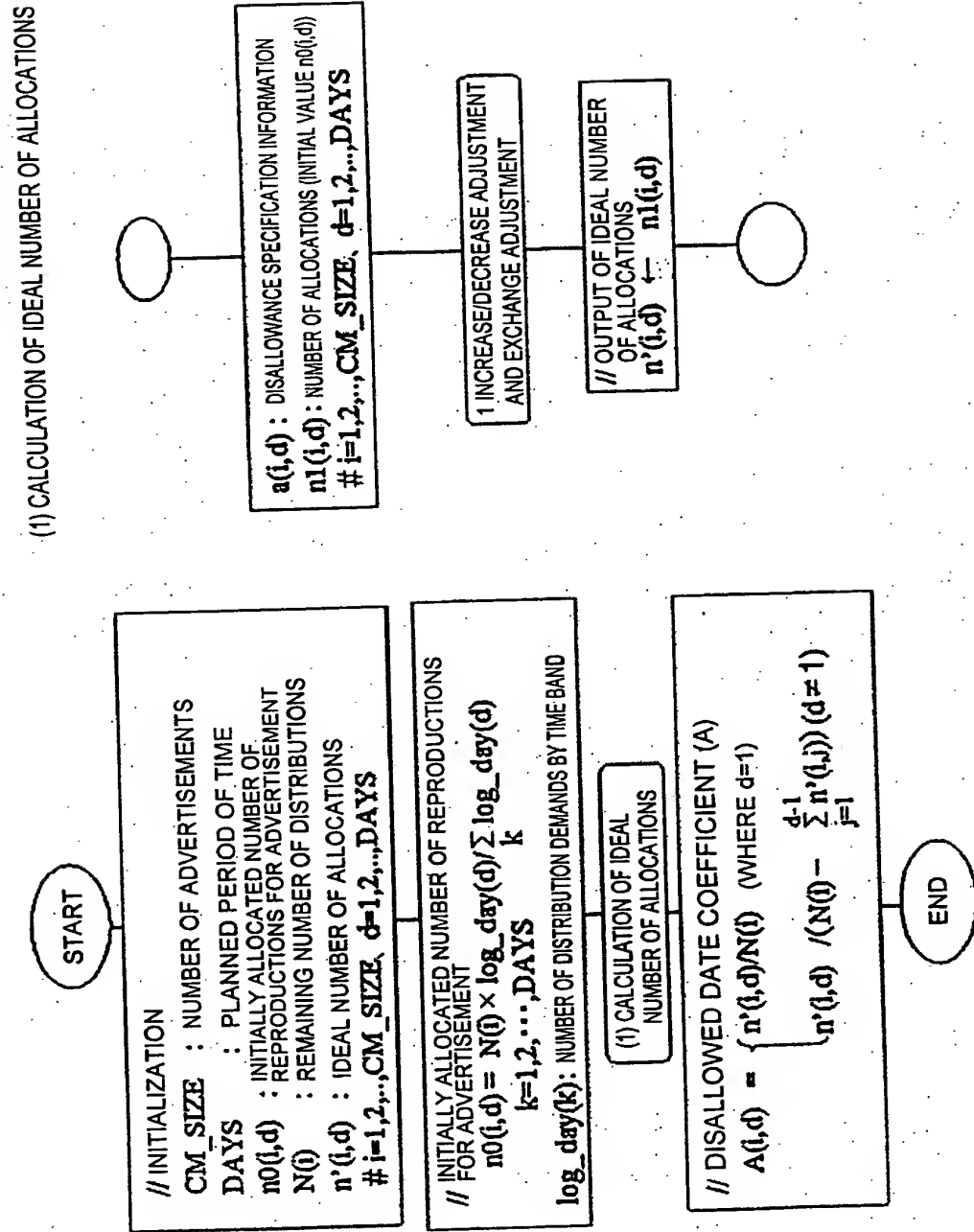


FIG. 16

CALCULATION FLOW OF TARGET DATE COEFFICIENT

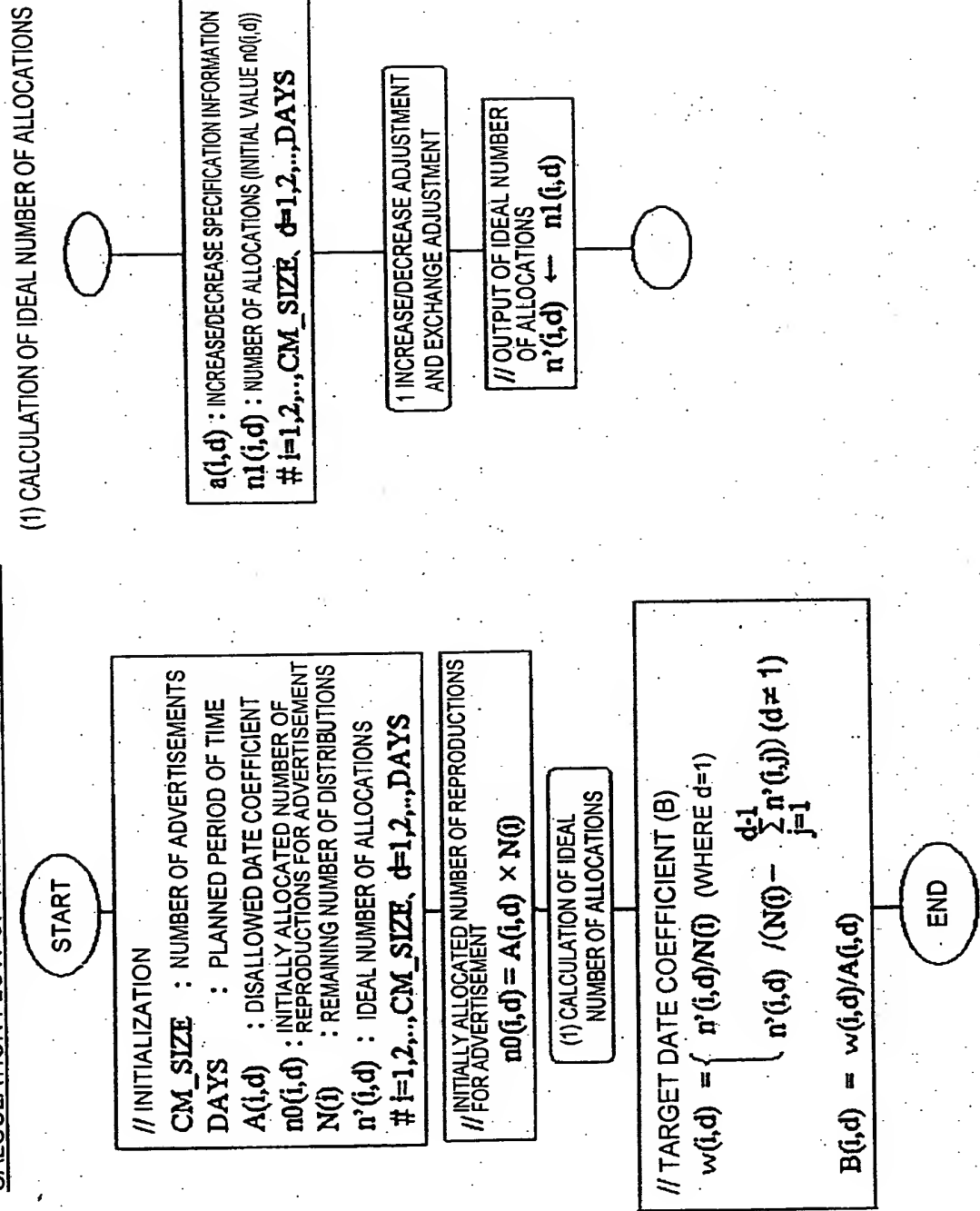


FIG. 17

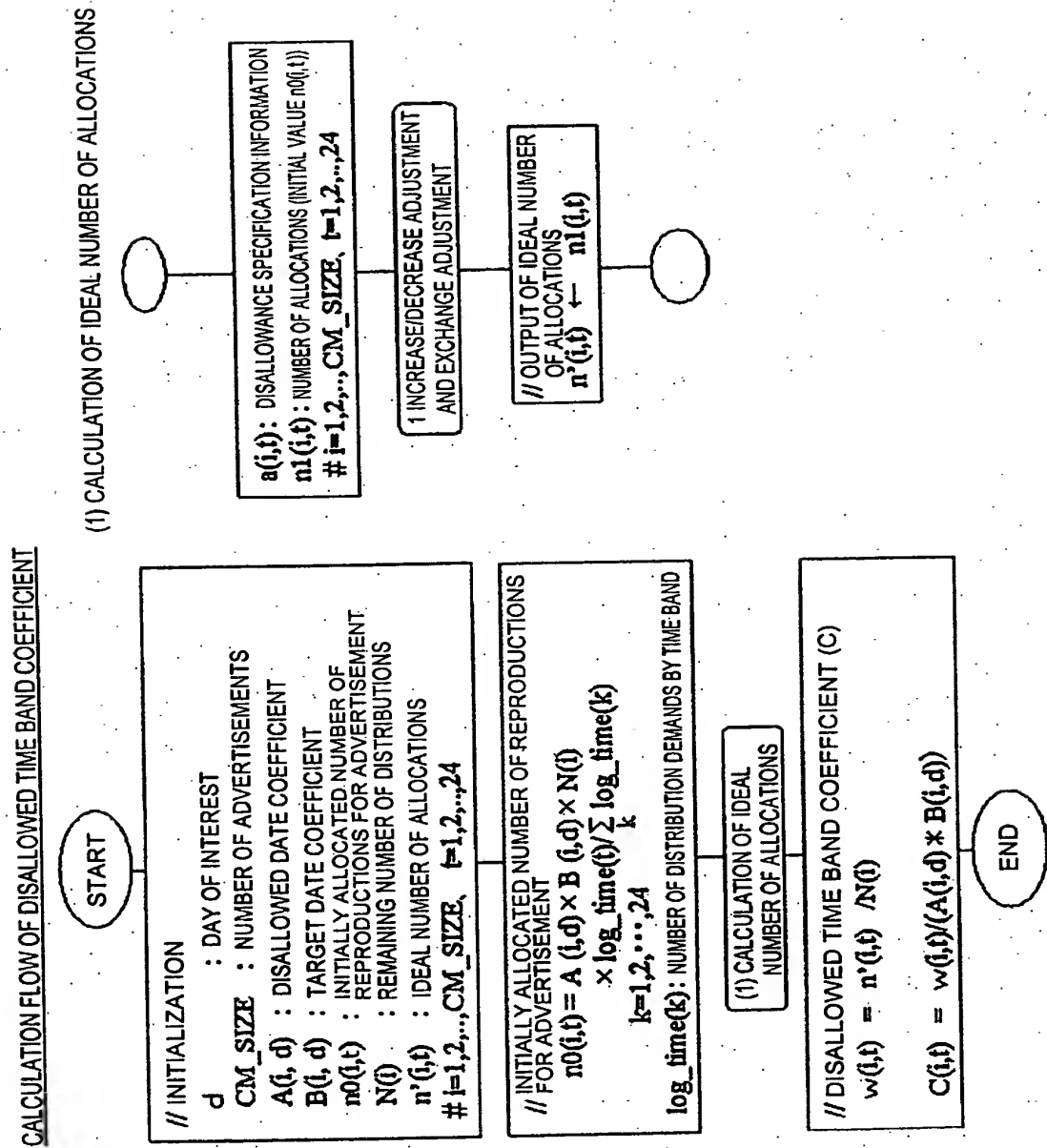


FIG. 18

CALCULATION FLOW OF TARGET TIME BAND COEFFICIENT

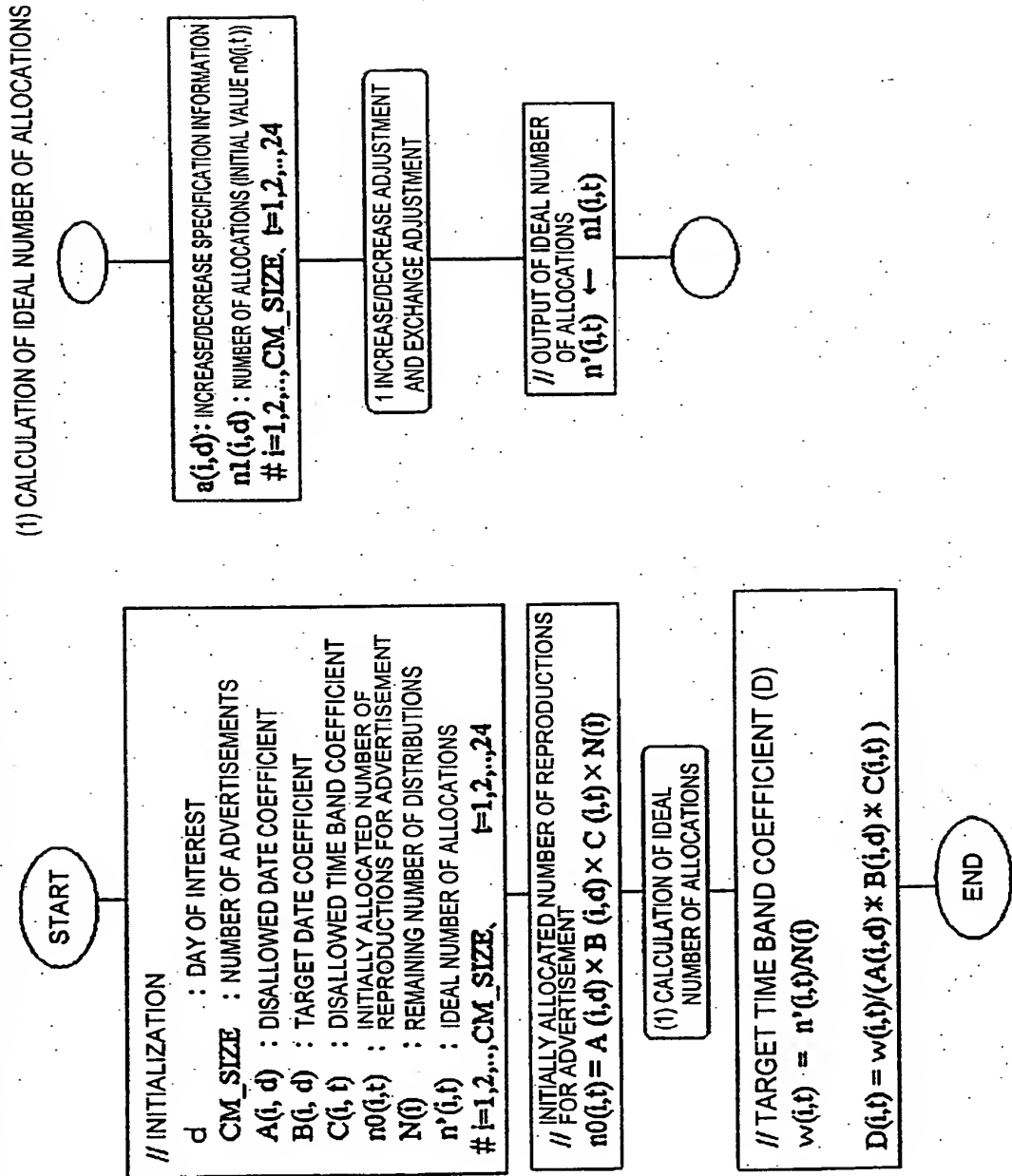
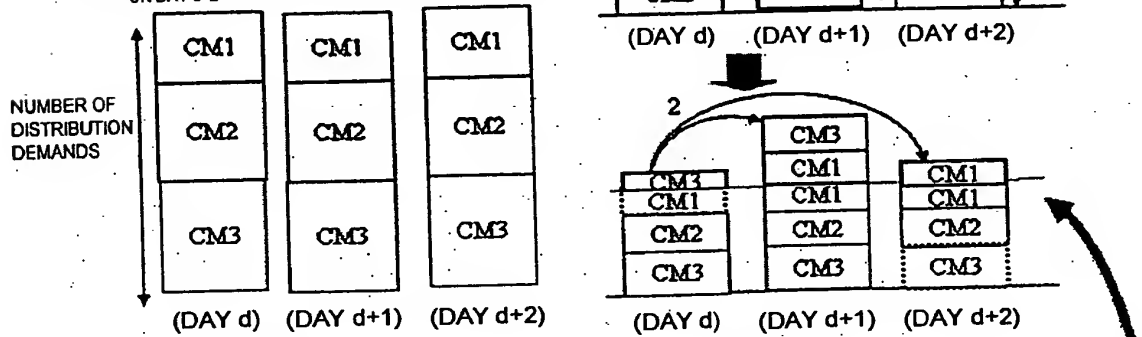


FIG. 19

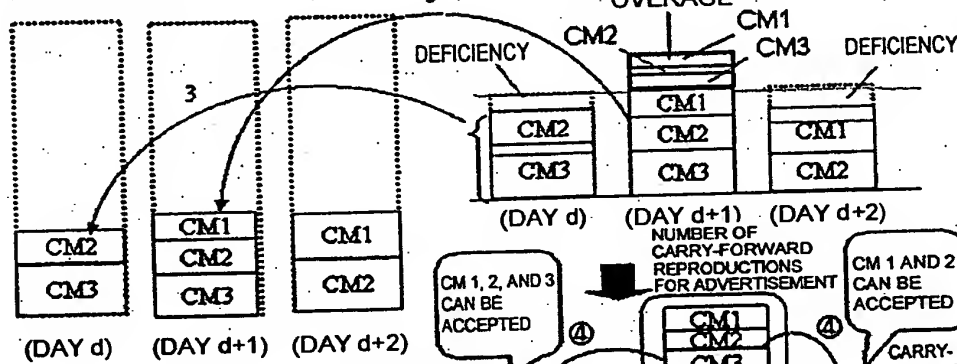
DISALLOWANCE ALLOCATION (TARGET ALLOCATION)

BEFORE ADJUSTMENT

CM1: ADVERTISEMENT WITH A DISALLOWANCE SPECIFICATION ON DAY d
CM2: ADVERTISEMENT WITHOUT DISALLOWANCE SPECIFICATION
CM3: ADVERTISEMENT WITH A DISALLOWANCE SPECIFICATION ON DAY d+2



(ACCUMULATION)



(AFTER ADJUSTMENT)

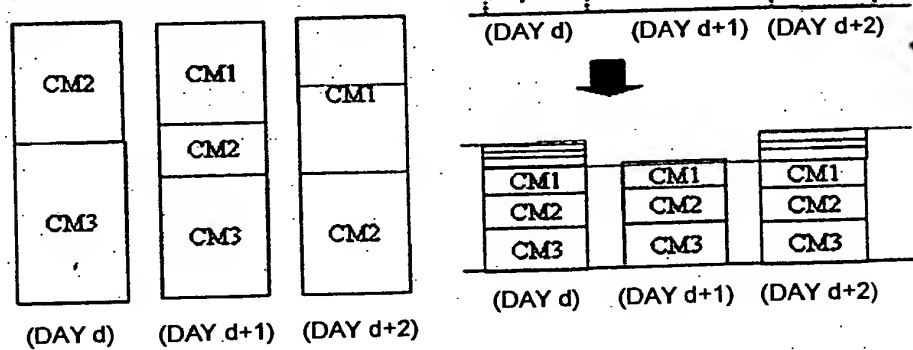


FIG. 20

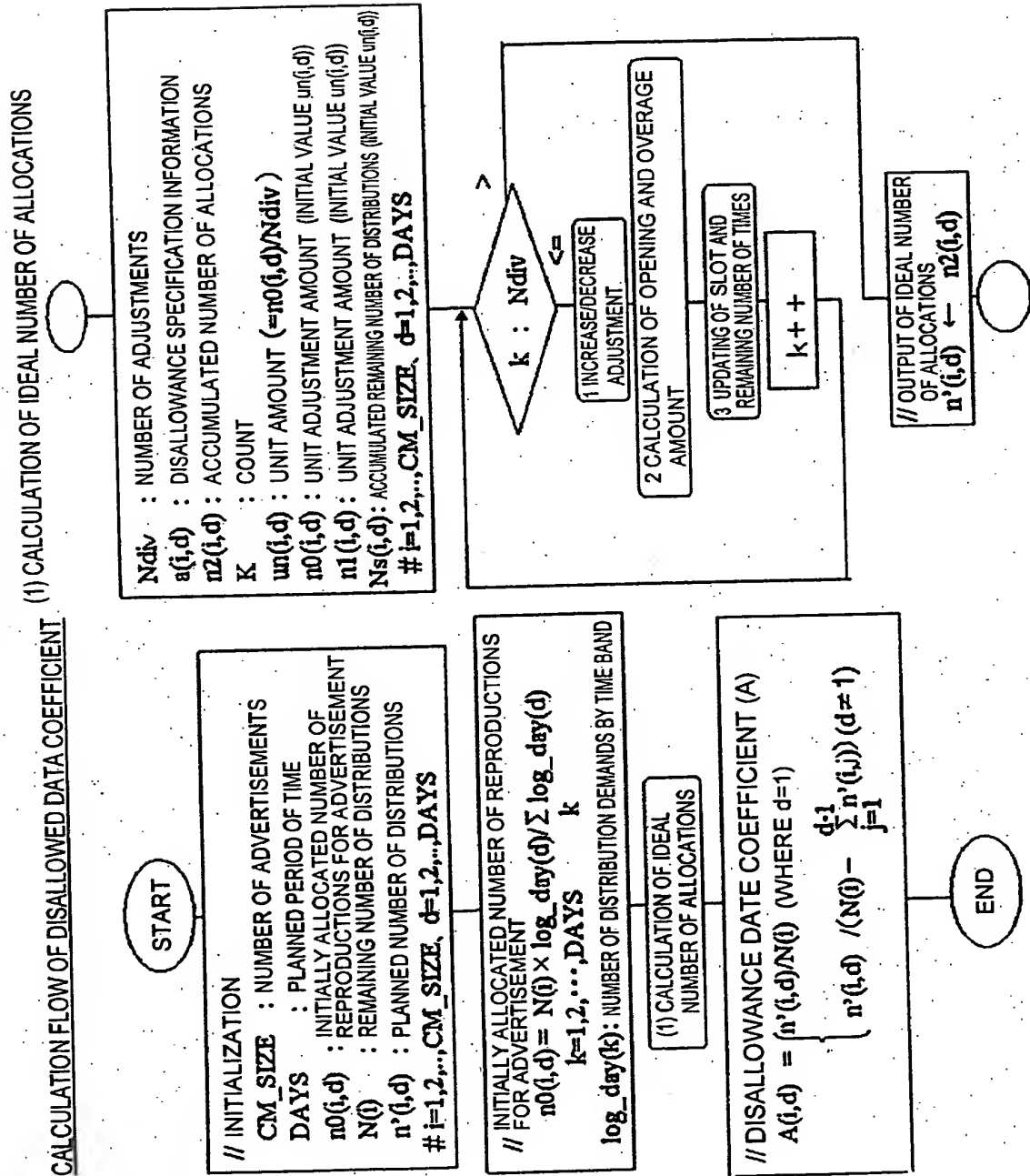


FIG. 21

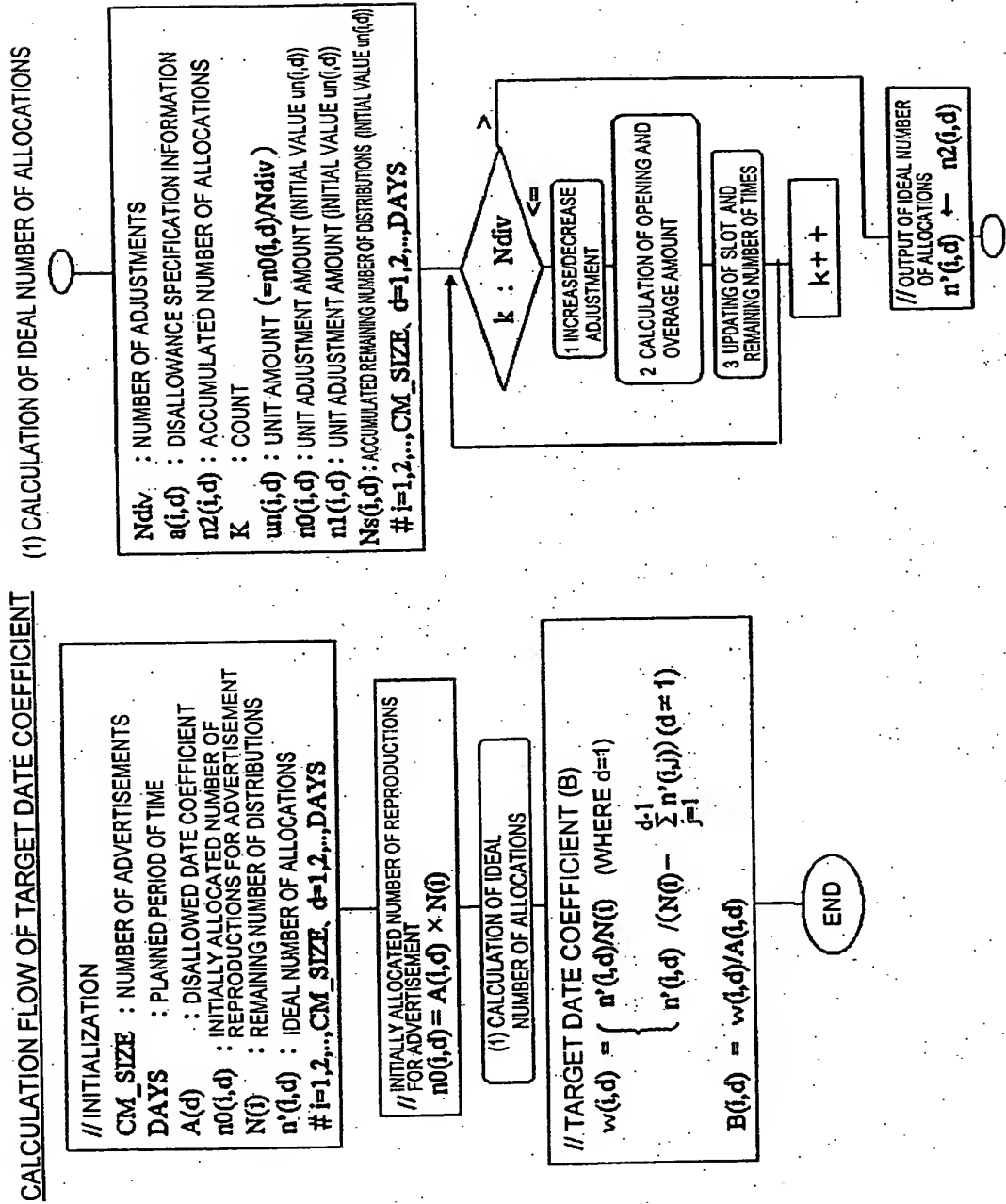


FIG. 22

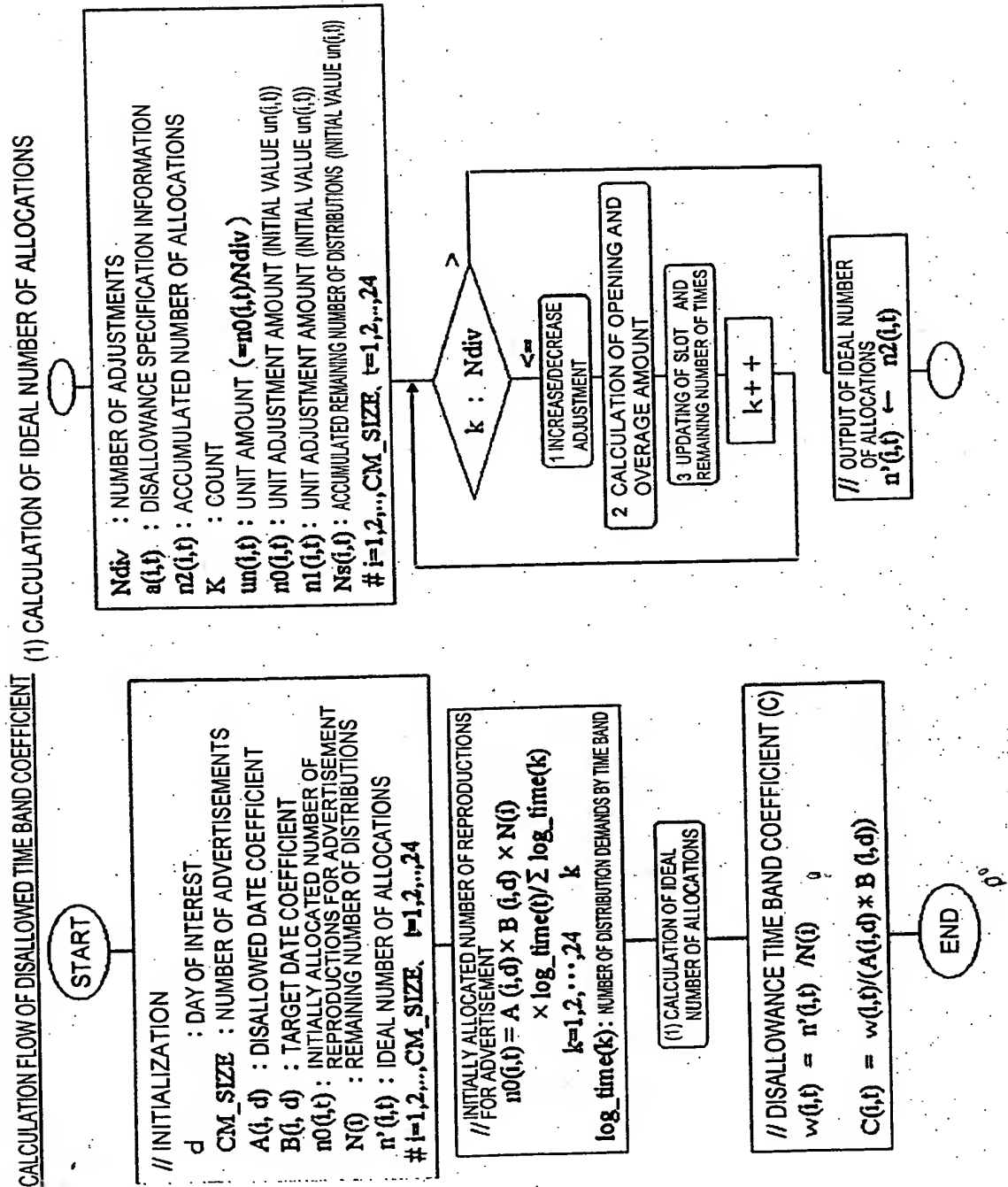


FIG. 23

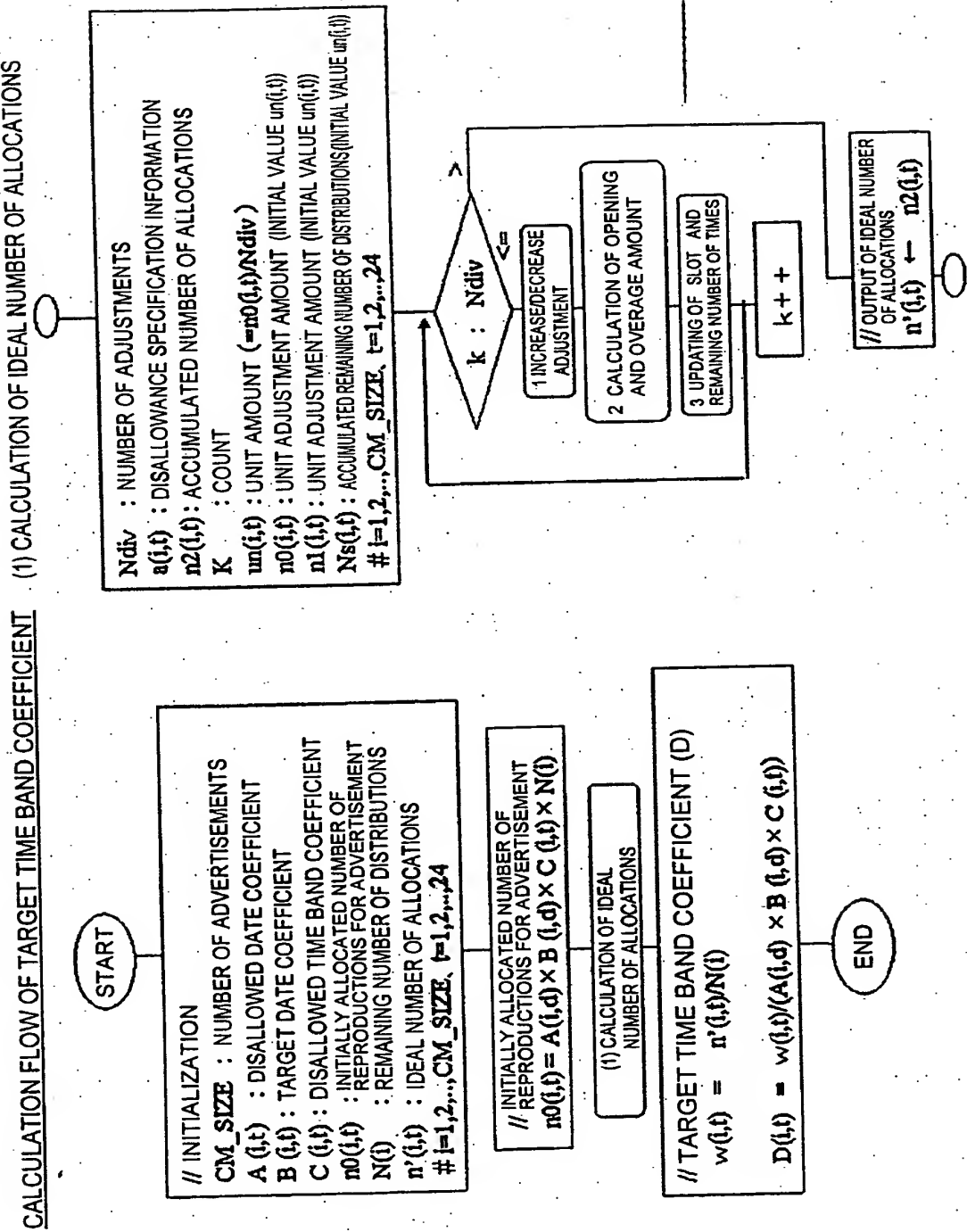
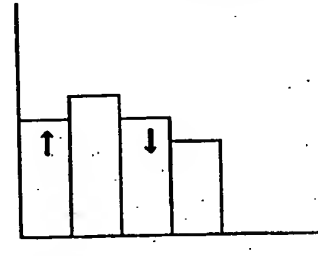
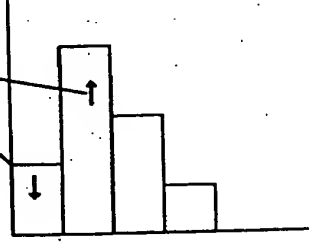
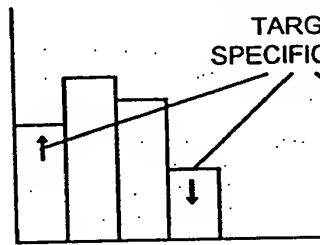
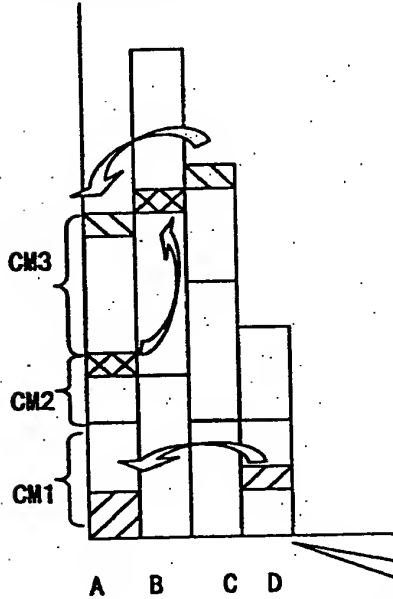
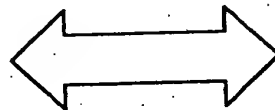
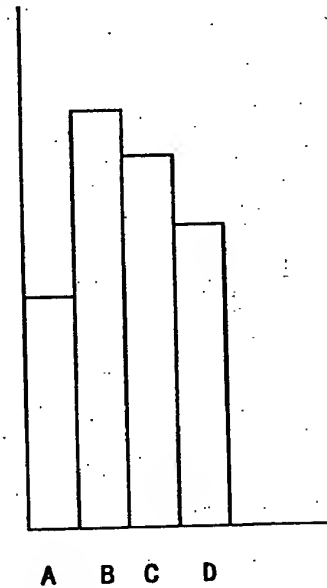


FIG. 24

DESIRED NUMBER OF DISTRIBUTIONS AFTER INCREASE/DECREASE ADJUSTMENT

CM 1 (NUMBER OF REPRODUCTIONS
FOR ADVERTISEMENT N₁)CM 2 (NUMBER OF REPRODUCTIONS
FOR ADVERTISEMENT N₂)CM 3 (NUMBER OF REPRODUCTIONS
FOR ADVERTISEMENT N₃)ACCUMULATION OF DESIRED NUMBER OF
DISTRIBUTIONS AFTER INCREASE/DECREASE
ADJUSTMENTNUMBER OF DISTRIBUTION DEMANDS
BY CATEGORY

BALANCE THESE

MAINTENANCE OF TOTAL DESIRED NUMBER OF
REPRODUCTIONS FOR EACH ADVERTISEMENT
(= ADJUSTMENT BETWEEN TARGETED CATEGORIES
AND NON-TARGETED CATEGORIES)

FIG. 25

(1) METHOD A

THE ADDED AMOUNT IS THE PRODUCT OF THE RATIO GIVEN AS THE BASIC COEFFICIENT AND THE AMOUNT OF THE ADVERTISEMENT.

THE ADDED AMOUNT $u(i, d)$ FOR ADVERTISEMENT i ON DAY d , FOR WHICH THE INCREASE/DECREASE RATIO p IS GIVEN IS

$$u(i, d) = n(i, d) \times p(i, d)$$

$n(i, d)$ IS THE AMOUNT OF ADVERTISEMENT i ON DAY d BEFORE ADJUSTMENT.

(2) METHOD B

THE ADDED AMOUNT IS THE PRODUCT OF THE RATIO GIVEN AS THE BASIC COEFFICIENT RELATIVE TO THE OVERALL AMOUNT OF ADVERTISEMENTS ON DAY d BEFORE ADJUSTMENT AND THE AMOUNT OF THE ADVERTISEMENT.

THE ADDED AMOUNT $u(i, d)$ FOR ADVERTISEMENT i ON DAY d , FOR WHICH THE INCREASE/DECREASE RATIO p IS GIVEN IS AS FOLLOWS.

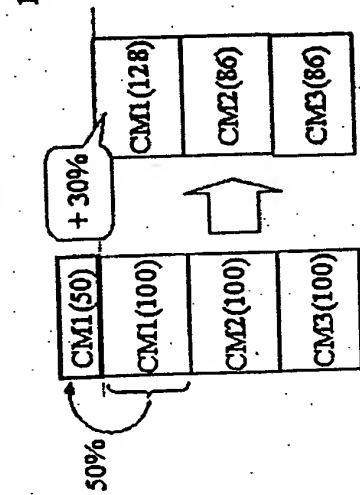
$$\frac{n(i, d) + u(i, d)}{\sum n(k, d) + u(k, d)} = \frac{n(i, d)}{\sum n(k, d)} (1 + p), \quad k=1, 2, 3, \dots, \text{CM SIZE} \\ \text{(NUMBER OF ADVERTISEMENTS)}$$

$$\therefore u(i, d) = \frac{n(i, d) \times p(i, d) \times \sum n(k, d)}{\sum n(k, d) - n(i, d) - n(i, d) \times p(i, d)}$$

$n(i, d)$ IS THE AMOUNT OF ADVERTISEMENT i ON DAY d BEFORE ADJUSTMENT.

(i) POSITIVE INCREASE/DECREASE SPECIFICATION

CM1 : $p=0.5(+50\%)$

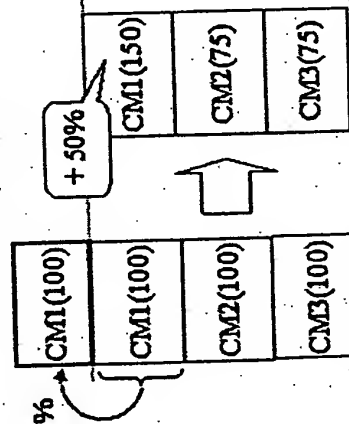


(ADJUSTMENT-METHOD A)

CM1 : +50%

(ii) POSITIVE INCREASE/DECREASE SPECIFICATION

CM1 : $p=0.5(+50\%)$



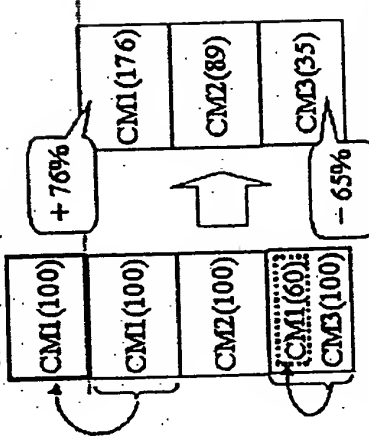
(ADJUSTMENT-METHOD B)

CM1 : +50%

(iii) POSITIVE AND NEGATIVE INCREASE/DECREASE SPECIFICATION

CM1 : $p=0.5(+50\%)$

CM3 : $p=-0.5(-50\%)$



(ADJUSTMENT-METHOD B)

CM1 : +50%

CM3 : -50%

FIG. 26

(3) METHOD A + METHOD B ($CM1 : p=0.5 (+50\%)$)

(i) POSITIVE INCREASE/DECREASE SPECIFICATION

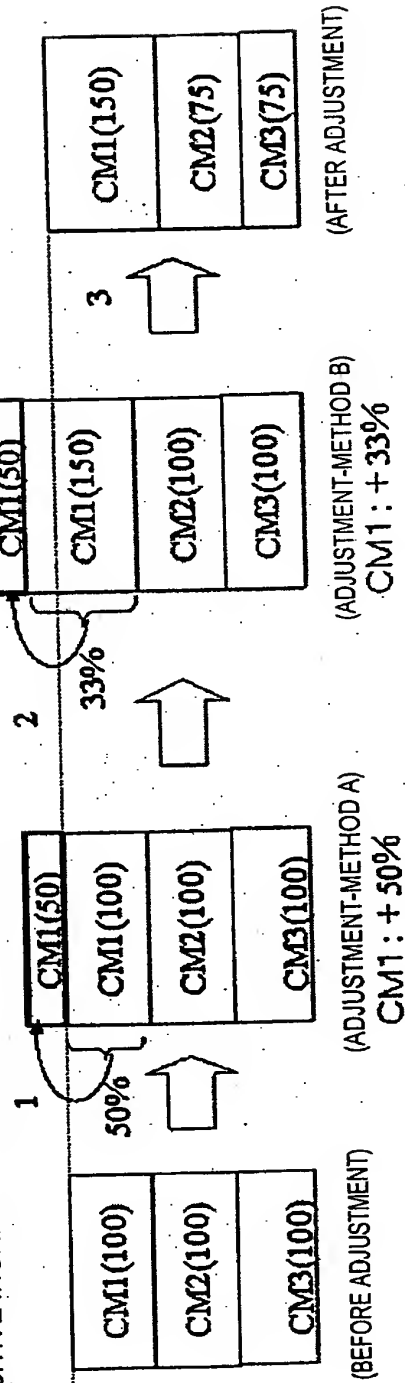
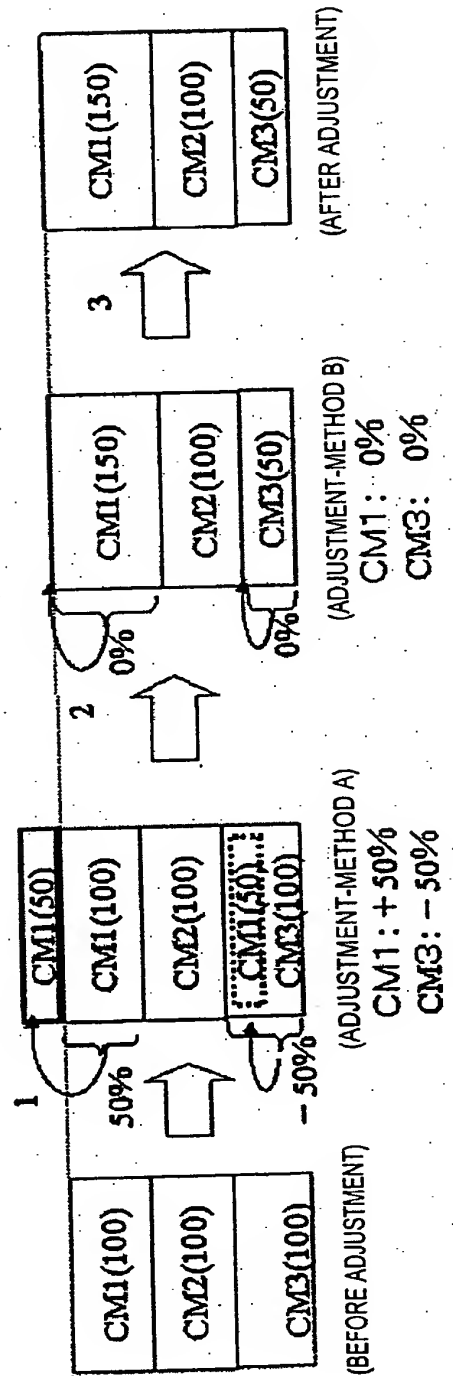
(ii) POSITIVE AND NEGATIVE INCREASE/DECREASE SPECIFICATION ($CM1 : p=0.5 (+50\%)$, $CM3 : p=-0.5 (-50\%)$)

FIG. 27

CALCULATION FLOW OF CATEGORY WEIGHT

(1) CALCULATION OF IDEAL NUMBER OF ALLOCATIONS

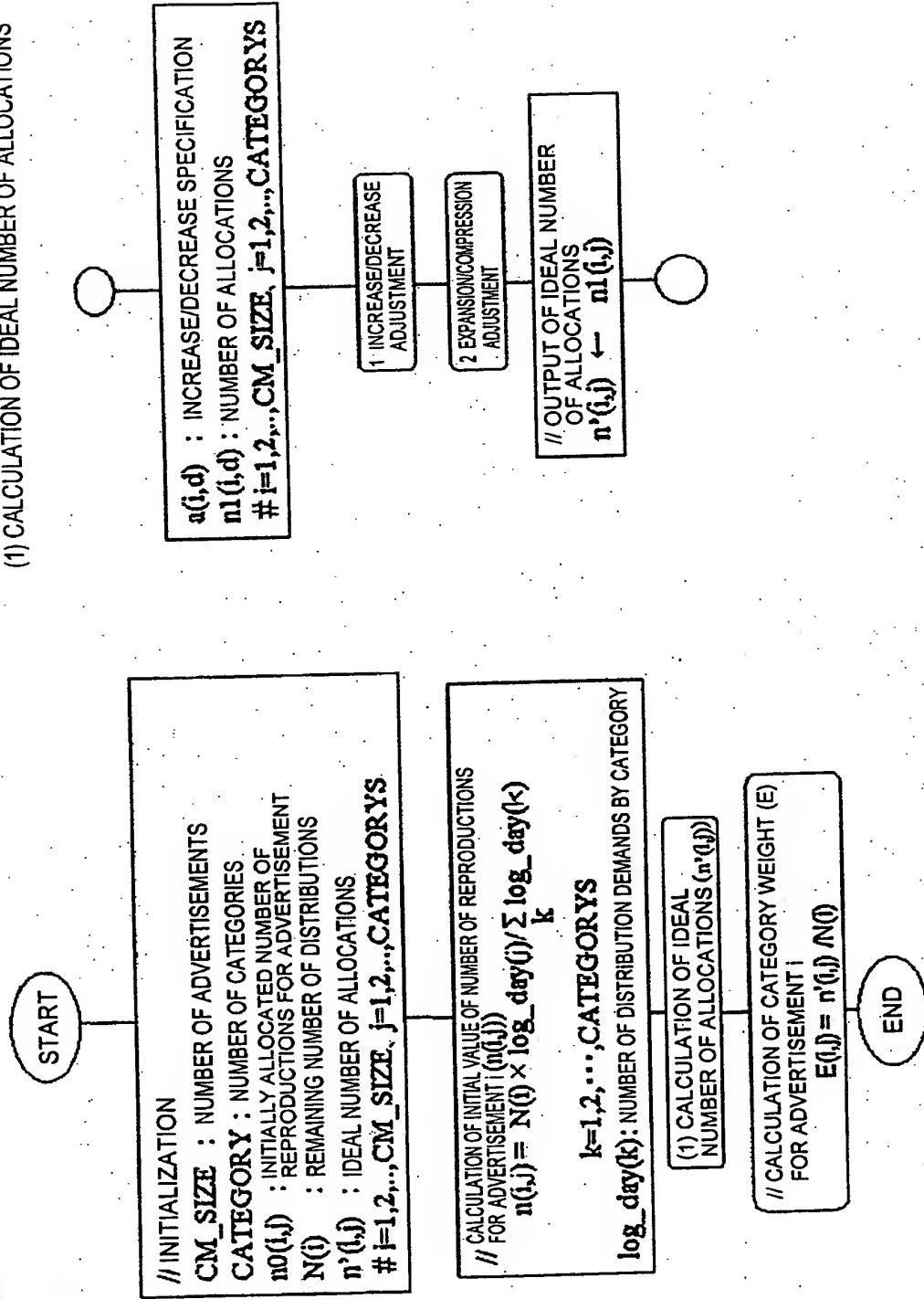


FIG. 28

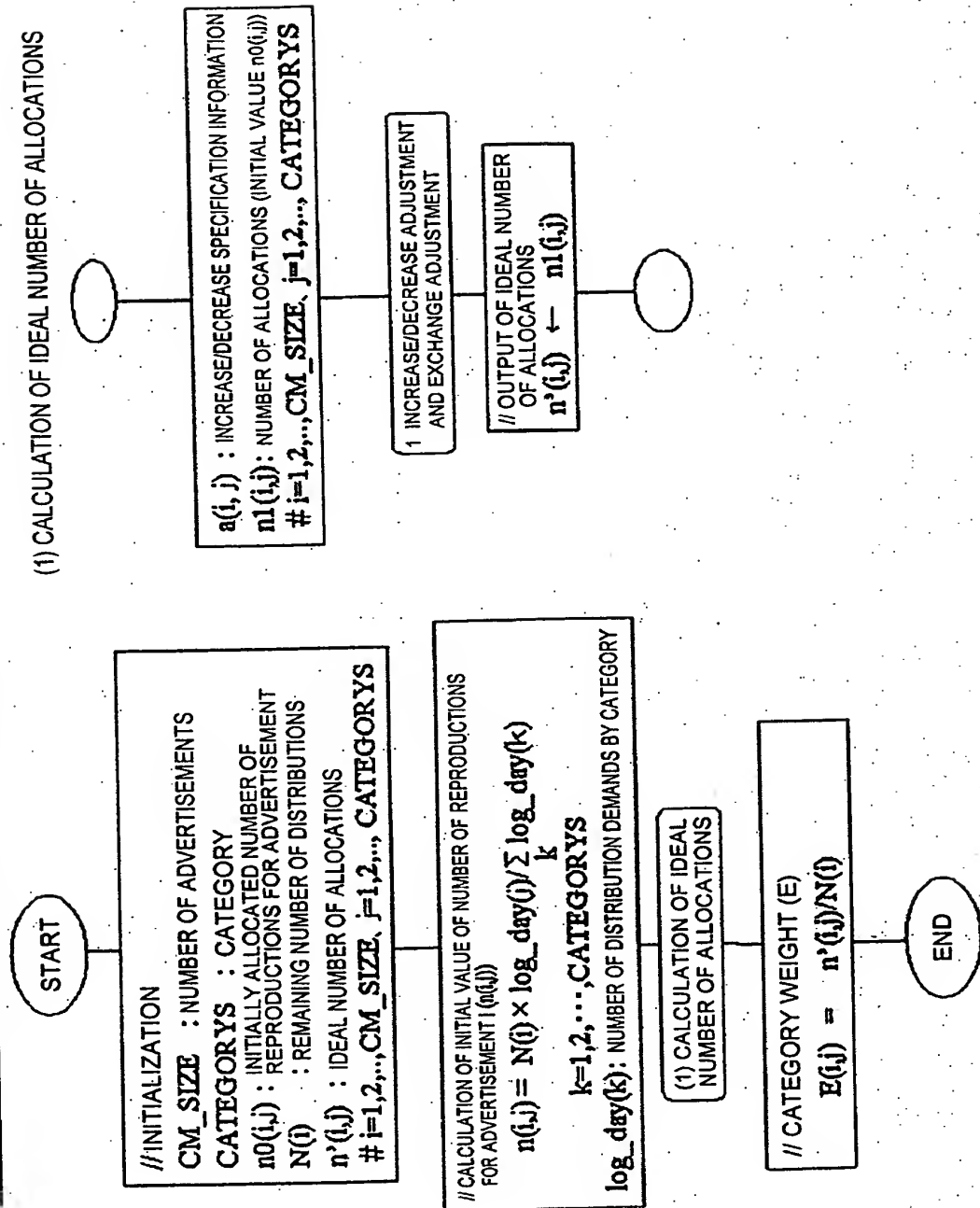
CALCULATION FLOW OF CATEGORY WEIGHT

FIG. 29

CALCULATION FLOW OF CATEGORY WEIGHT (1) CALCULATION OF PLANNED NUMBER OF ALLOCATIONS

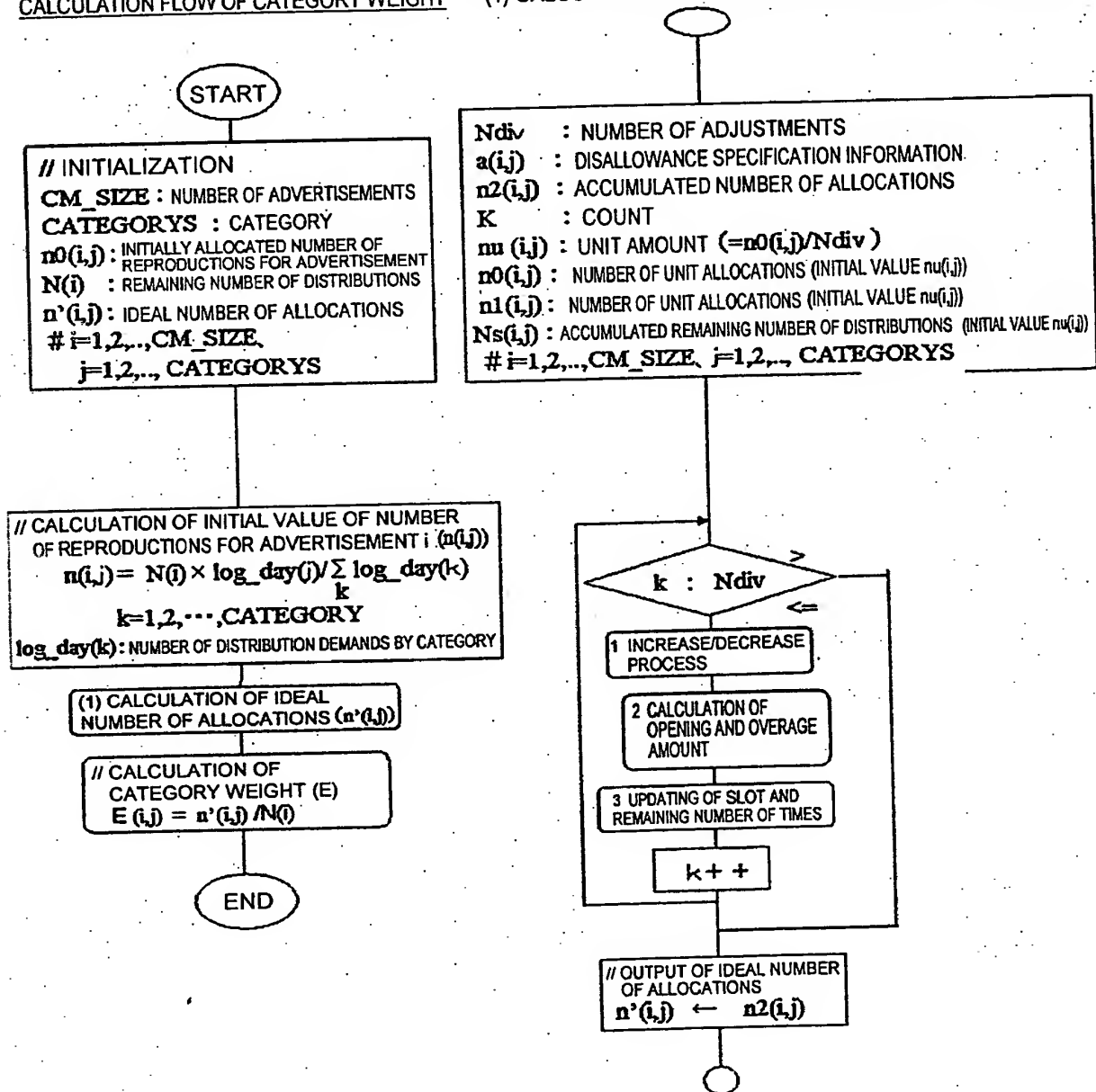
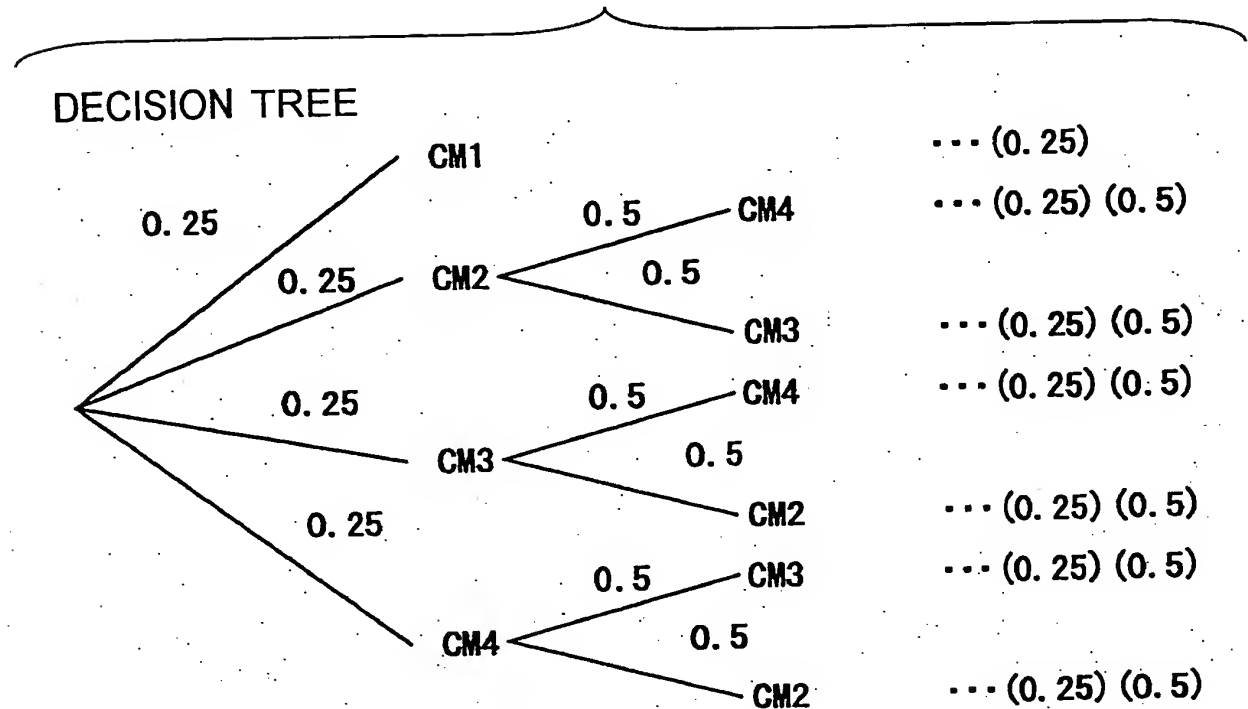
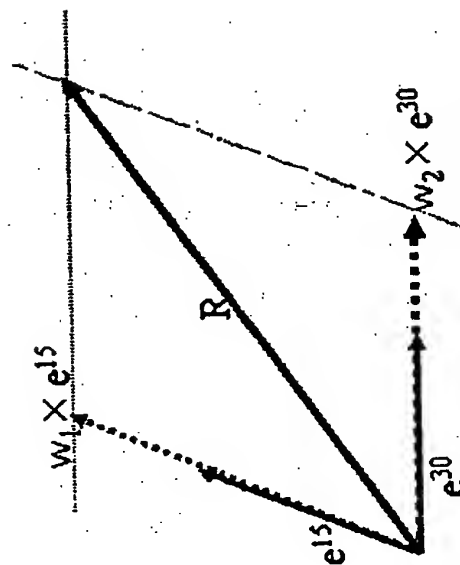
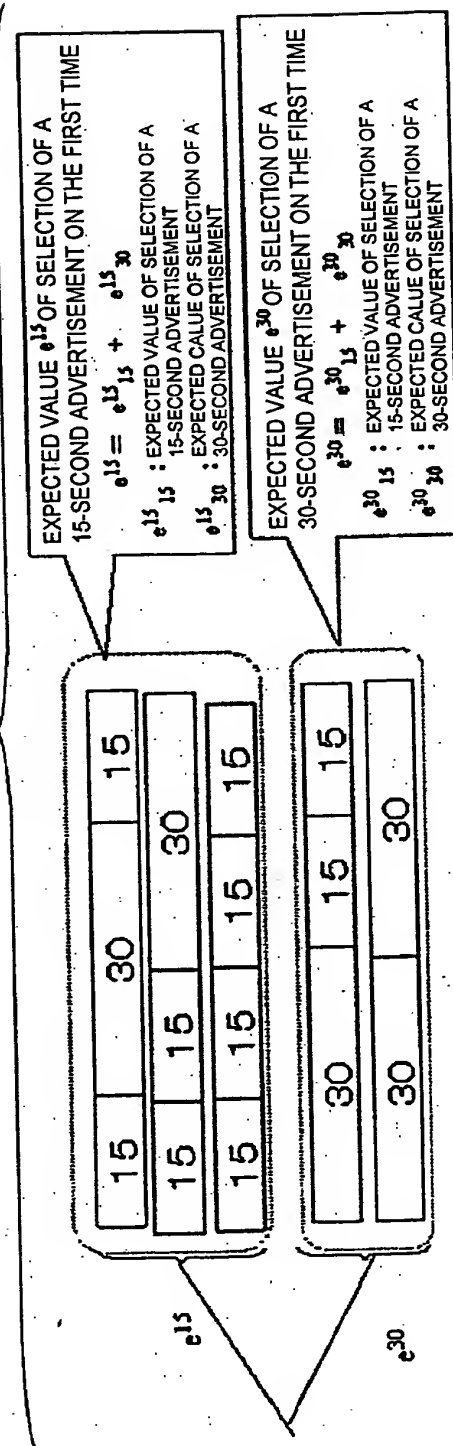


FIG. 30



ADVERTISEMENT TYPE	SELECTION RATIO $P1(i)$	CHANGE RATIO $sa(i)$	MINIMUM COMMON MULTIPLE	HANDICAP COEFFICIENT $w_flame(i)$
CM1 :	0.25	1	2	2
CM2 :	0.5	2		1
CM3 :	0.5	2		1
CM4 :	0.5	2		1

FIG. 31



$r = (N_{15}, N_{30})$, N IS THE NUMBER OF REMAINING TIMES
 $R = (R_{15}, R_{30}) = r / |r|$

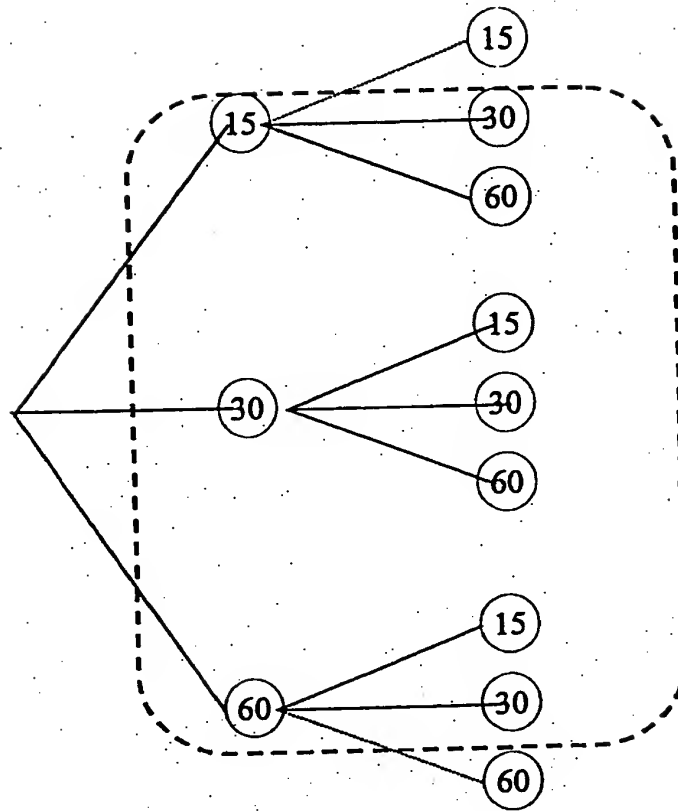
$$R = w_1 \times e^{15} + w_2 \times e^{30}$$

$$\Leftrightarrow \begin{cases} R_{15} = w_1 \times e^{15}_{15} + w_2 \times e^{30}_{15} \\ R_{30} = w_1 \times e^{15}_{30} + w_2 \times e^{30}_{30} \end{cases}$$

w_1 AND w_2 ARE CALCULATED

FIG. 32

(A)



(B)

PROBABILITY DISTRIBUTION

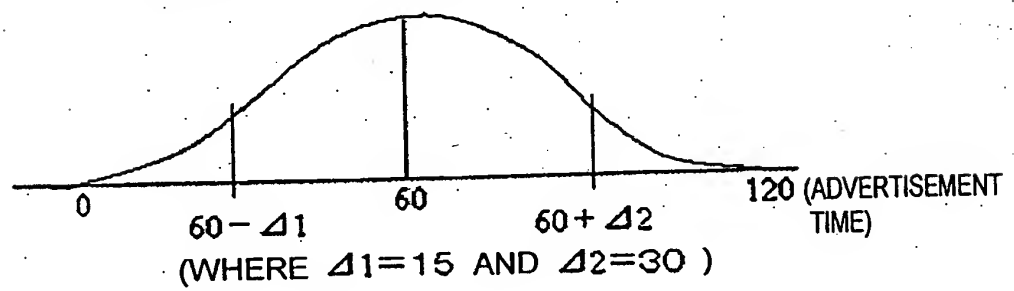


FIG. 33

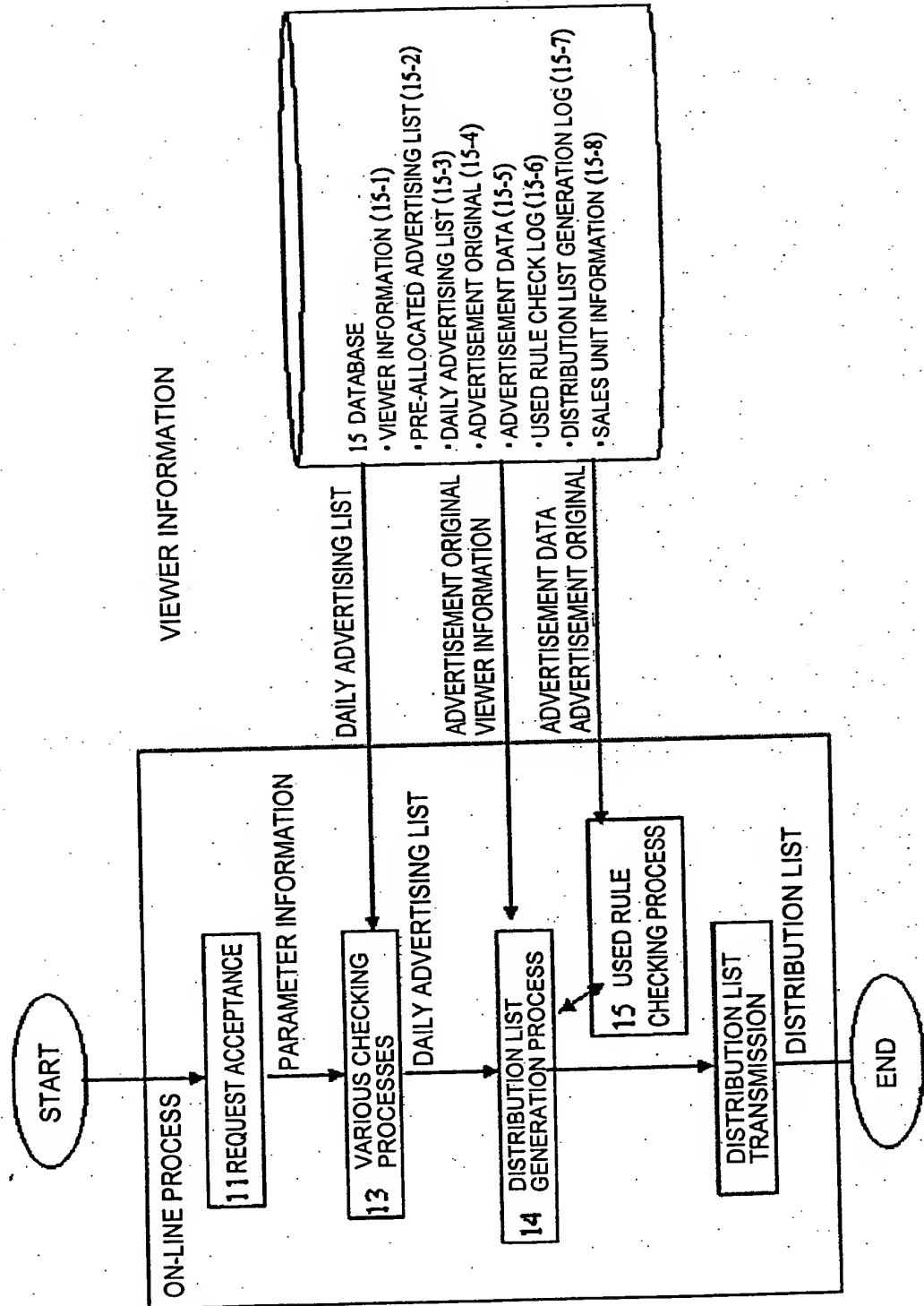


FIG. 34

<PRE-ALLOCATED MONTHLY ADVERTISING LIST>

[illegible]

<PRE-ALLOCATED DAILY ADVERTISING LIST>

SLOT TIME BAND COEFFICIENT					DISALLOWANCE INFORMATION			USED RULE			
	5	10	~	60	80~	NW	AGE LIMIT CLASS	NUMBER OF MATERIAL SECONDS	BIT RATE	NUMBER OF PIXELS	FORMAT
	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○

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